THE MUSKETRY TEACHER

A COMPLETE GUIDE FOR INSTRUCTORS OF MUSKETRY

By CAPTAIN A MORRIS, I. of M.
7th Royal Fusiliers
INSTRUCTOR of MUSKETRY TO THE
FALMOUTH GARRISON.

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A COMPLETE GUIDE

FOR

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BY

CAPTAIN A. MORRIS, I. OF M.

7th Royal Fusiliers

(Instructor of Musketry to the Falmouth Garrison)

FULLY ILLUSTRATED

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PREFACE.

I am very much indebted to the following manuals:—

"Field Service Regulations,"
"Infantry Training,"
"Musketry Regulations,"
"Training and Manœuvre Regulations,"
and the
"Field Service Pocket Book,"

to which I may have had recourse for official information.

Quotations taken from any of the official manuals are gratefully acknowledged at the termination of the paragraph or sentence to which the subject refers.

A. MORRIS, *Captain*,
7th Royal Fusiliers.

FALMOUTH,
September 3rd, 1915.

CONTENTS.

LIST OF ILLUSTRATIONS.

ABBREVIATIONS USED.

F.S.P.B. ..... Field Service Pocket Book, 1914.
F.S.R. ..... Field Service Regulations, Reprint 1914.
I.T. ..... Infantry Training, 1914.
M.R. ..... Musketry Regulations, Part I., Reprint 1914.

THE MUSKETRY TEACHER.

CHAPTER I.

The object of this little treatise on the all-important subject of Musketry is to enable the officer or non-commissioned officer to gain a thorough knowledge of his subject without being compelled to commit to memory Musketry Regulations. I am confident it will supply a long-felt want in the Service, and the definitions ought to prove invaluable for lectures or instructional purposes. It is my intention to treat each step in the training of the soldier in as thorough a manner as possible as is compatible with interest without boredom. The chief difficulty experienced with instructors is their lack of initiative in teaching, as they are prone to make Musketry a parade instead of an interesting and intellectual lesson.

It is manifest that if Musketry is taught in drill fashion, the squad becomes bored very soon and consequently loses interest, which is such an essential factor in achieving the object aimed at—Efficiency.

As a guide to what principles an instructor ought to work upon I will quote the following:—

The Qualifications of a Good Instructor.

1. He should possess a thorough knowledge of his subject.
2. He should have a sequence of instruction.
3. He should not be too critical.
4. He must be patient and forbearing.
5. He ought to teach by force of example rather than by word of mouth.
6. He must be able to impart his knowledge clearly and concisely.
7. He must be able to demonstrate correctly what he teaches.
8. He must be quick to detect faults and apply a remedy.

9. He must be colloquial and able to stimulate interest and competition amongst his pupils, at the same time maintaining firm discipline.

I consider that an instructor who possesses the foregoing qualifications may consider himself very lucky, but at the same time these can be acquired by practice and continuity of purpose. There should be a universal system of instruction throughout the Army for obvious reasons, and I am sure that the following sequence will appeal to the majority.

Sequence of Instruction.

1. Explanation or Illustration.
2. Demonstration.
3. Imitation.
4. Interrogation or Test.

Probably the suggested sequence will require a little fuller explanation than what its skeleton form will convey. Let us suppose you intend to teach a recruit the "*Standing Position.*" The first thing you must do is to explain to him when it is used; you proceed as follows:—

EXPLANATION.—I am going to teach you the "Standing Position." Now this position is used on service to fire over high breastworks, standing corn, or to take a snapshot at the enemy in order not to materially check the pace of the advance.

After you have explained you demonstrate, and it is very useful here to have a system of working, work from eyes to toes.

DEMONSTRATION.—You show the recruit the completed position. Then you analyse it, first showing him the loading position, standing.

The following are the essentials in the loading position:—

1. Eyes on the mark.
2. Muzzle pointing upwards.
3. Firm grip of the rifle with left hand at point of balance.
4. Butt immediately in front and clear of the hip.
5. Thumb on base of top cartridge and forefinger hooked round the cut-off.

Standing Position—"Loading."

To face Page 6.

6. Left elbow close to the side.
7. Feet apart, body erect and poised.

When you have done this the next thing to do is to tell the recruit how to get into that position.

In Order to Load.

On the command "Standing—Load," turn half right, carry the left foot off to the left front and slightly forward. Bring the rifle to the right side immediately in front and clear of the hip, grasping the rifle firmly with the left hand at the point of balance (immediately in front of the magazine), push the safety catch forward with the thumb or forefinger, then by a downward and outward pressure open the cut-off. Seize the knob of the bolt with the forefinger and thumb and draw it back to its full extent. Take a charger from your pouch and place it vertically in the guides. *Button the pouch.* Then with the thumb of the right hand on the base of the top cartridge and forefinger round the cut-off force the cartridges into the magazine. Close the breech. Apply the safety catch. When

you have taught him to "Load" the next thing is to teach him to "Unload."

To Unload.

Push the safety catch forward, draw the bolt smartly backward and forward until all the cartridges are ejected. Close the breech, press the trigger, place right hand over the bolt and close the cut-off by an inward pressure. Apply the safety catch, lower sights to normal if adjusted, and return to the "Order."

When you have demonstrated so far the next step is the third stage of your sequence—Imitation.

IMITATION.—You say to the squad, "Now, I want you to practise that." When the squad practises the Loading Position and you think they are growing tired you say "Squad Rest." Then you give them the reasons as follows:—

1. *Eyes on the Mark*—So as not to lose sight of the target.
2. *Muzzle pointing upwards* — For safety.

3. *Firm grip of the rifle with left hand at the point of Balance*—(i) To facilitate rapid sight setting; (ii) for determination of effort.
4. *Forefinger round cut-off* — For leverage.
5. *Left elbow close to the side*—For comfort.
6. *Butt clear of the hip*—So as to facilitate coming quickly to the aim and facilitate rapid manipulation of the bolt.
7. *Feet apart*—Firm grip of the ground.
8. *Turning half right*—To bring the right shoulder around so as to make a bed for the butt.

This being finished, brings you to the fourth or final stage—Interrogation.

INTERROGATION OR TEST.—You question the squad. You ask each individual a question—

Why do I turn half right?
Why do you hold the muzzle up?
Why do you keep your eyes on the mark?

When you consider the squad has thoroughly grasped this you assume the "Firing Position—Standing" and proceed as before. The points to be noted here are as follow:—

1. *Eyes on the mark.*
2. *Sights upright.*
3. *Left elbow well underneath the rifle.*
4. *Right elbow well up.*
5. *Firm grip with both hands.*
6. *Eye well back from cocking piece.*
7. *Body well balanced.*
8. *First pressure* immediately butt touches the shoulder, align the sights on the mark, restrain the breathing and take the second pressure.

Now you make them imitate you, then you give them the reasons for the essentials as before, then interrogate.

There are a few preliminary points which an instructor must see to before instructing.

1. He must open the squad out to about two paces and bring them up on the flanks.

2. He must inspect arms and dummy cartridges.
3. His position should be a few paces to the right front of the squad.
4. He must give his squad a target to aim at, and take one for himself.
5. He should impress upon his squad the necessity of closing the pouch.
6. No squad should consist of more than seven men.

It is not my intention to deal with any further positions than the Standing, as most of the essentials in the other positions are common to the former.

Chapter II.

THE OBJECT OF SIGHTS—RULES OF AIMING — COMMON FAULTS IN AIMING—REASONS FOR TAKING FULL SIGHT AND 6 O'CLOCK AIM.

The first thing to do with a recruit before teaching him anything about aiming is to tell him the object of the sights on his rifle. You explain to him in the following way:—

Now the sights on your rifle are there for a specific purpose, in order to give you what is known as *elevation*. What I mean by *elevation* is probably better illustrated by an example. Take some object about 100 yards away. Now if I wanted to hit that object with a stone, I would not aim at it direct, but I would aim above it, so as to counteract the effect of the resultant forces acting upon it. In

the same manner these sights enable me to give the necessary tilt to the rifle in order that my shot may be effective.

The backsight enables me to get the required elevation by getting that line you see on the slide to correspond with the line of any range on the graduated stem, as you will see the leaf of the backsight is graduated up to 2,000 yards. Suppose I wanted to put my sights up to 550, I should make the line on the slide correspond with the line midway 500 and 600 yards on the leaf. The sights are adjusted by pressing the stud on the slide and putting the sights up to the required elevation. You see that wheel on the right of the slide; that is known as the worm wheel, its circumference is divided into 10 spaces, denoting five yards each. This can be used by pressing the stud on the left of the slide and by means of your thumb-nail revolving the wheel, each click denoting five yards. Get the squad to practise adjusting their sights at this stage.

When they have mastered this, then you teach them the use of the

Long Range Sights.

The long range sights are situated on the left side of the body and consist of an aperture backsight, a bead on a vertical adjustable arm provided with a pointer and a graduated dial sight. These sights are used from 1,600 yards and upwards. The advantages of the dial sight for long range firing are:—

(1) There is less strain on the muscles of the neck.

(2) Easier to focus.

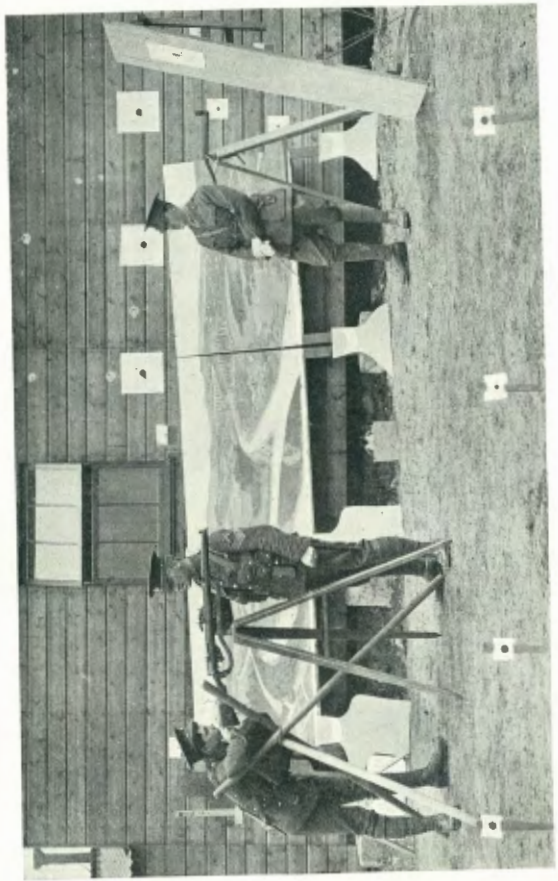
When you think your squad thoroughly understands this your next step is to teach them Aiming and the rules which govern it.

The Rules of Aiming.

(1) Sights upright.

(2) Left eye closed.

(3) Tip of the foresight in centre of the "U" of the backsight and level with its shoulders aiming at 6 o'clock.



Showing Recruit how to take an aim by means of the Le Gret Aim-Teacher. *To face Page 13.*

In order to teach Aiming you use the Le Gret aim teacher.

The first thing to do is to show the recruit an absolutely correct aim, then get him to take a correct aim through the open sights, check the aim by turning over the pivoted shutter, and then analyse it.

(1) Show him relation of foresight to the object.

(2) Show him relation of foresight to the backsight against a piece of white paper or sky-line.

(3) Show him relation of foresight, backsight and object combined. Then get him to lay an aim and check as before.

Common Faults in Aiming.

(1) Sights inclined.

(2) Too much or too little foresight.

(3) Looking at foresight instead of target.

In teaching the recruit to aim you tell him to take a full sight, and since you must not tell a man anything in musketry without a reason you must explain.

Reasons for Taking a Full Sight.

(1) The rifle is so sighted at the factory.
(2) There is less tendency to vary the amount of foresight in the back-sight.
(3) It is easy to teach and learn.
(4) It facilitates rapidity of aim.

Why you aim at 6 o'clock is as follows:

Reasons for Aiming at 6 o'clock.

(1) The rifle is so sighted at the factory.
(2) The whole object is kept in view.
(3) Better chance of hitting a disappearing target or if the distance is over-estimated.
(4) It counteracts the tendency to shoot high.
(5) It provides a definite point of aim.
(6) It assists in close grouping in collective field fire.

When the recruit has been taught and has practised aiming he should be tested for accuracy and consistency by the triangle of error method.

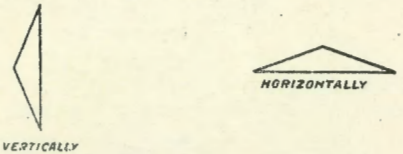
THE TRIANGLE OF ERROR.

Points to Note:—1. Ring round Instructor's aim. 2. Recruit's aims numbered 1, 2 and 3 respectively, joined together to form a triangle. 3. Instructor looks towards Recruit and *not* at the eye disc.

To face Page 15.

This is one of the Standard Tests, Musketry Regulations, para. 299, sub para. v. It is the only proper way of testing a man's aim. The instructor uses an eye-disc on a piece of white paper on the wall 10 yards away. A rifle rest and a tripod with sandbag to steady the recruit. Instructor first lays an aim on the bull's-eye in centre of disc, which is being held by another man, then he shows the aim to the recruit. The aim is marked by means of a pencil mark and a ring drawn around the instructor's aim to distinguish it from the recruit's. The recruit then lays three aims, which are marked and numbered, 1, 2, and 3 consecutively. These aims are joined up so as to form a triangle. For the recruit to pass this test no side of the triangle must be more than one-third of an inch, or the centre of the triangle must not be more than one-third of an inch from the instructor's aim. If the recruit's aim is below that of the instructor it shows that he has taken too much foresight; if the recruit's aim is too low right his mistake would be high left, and vice versa; the reason for this being it is

the target that moves and not the rifle, as in ordinary firing. The triangle can be criticised by its position, size and shape. If the triangle lays down horizontally on the paper it means his chief error is inaccurate centring of the foresight; if the longest side of the triangle lays vertically on the paper it means inconsistency in the amount of foresight taken each time.

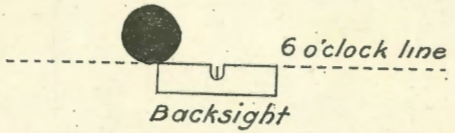


Any recruit who fails to reach the standards in this test should be noted for further instruction.

Aiming off for Wind.

In order to teach aiming off for wind, *First Stage*: Explain to recruit that wind is one of the most difficult things we have to contend with in shooting. There are two methods of making allowance for

wind: (i.) The wind-gauge, but this is not a practical method; (ii.) aiming off, that means that one aims sufficiently into the wind in order to counteract the amount of space the bullet is deflected from its normal course by the wind, but one thing must be kept in mind and that is, the firer must keep the 6 o'clock line.



The recruit should first be practised in aiming off for wind with an elementary bull's-eye target. Then he should be taken out in the open and practised in aiming off with 1st and 2nd class figure targets. He will not be practised in aiming off more than 6 feet right or left, or at ranges beyond 600 yards. He is allowed

one foot of error either way (right or left). The way this is tested is as follows:—

Procure rest, target, and ask recruit to aim, say, 2 feet left. then call up fatigueman, who accurately measures 2 feet from 6 o'clock of figure, and holds two upright poles on either side of him, each pole a foot from himself. If the recruit's aim is between these two poles he passes.

Aiming off for Movement.

A fatigueman moves on a parallel front to the squad (walks up and down from left to right and back again). The instructor first of all demonstrates how to aim off for movement, emphasizing the points that the sights must first be directed at 6 o'clock of the target (fatigueman), and then the rifle must be brought along, keeping the 6 o'clock line, to the required distance in front of the target (direction in which it is proceeding), and the trigger must be pressed whilst the rifle is still on the swing. The recruit then imitates, the instructor, looking through the smoked glass of the aim corrector, seeing that the recruit carries it out correctly. A man advancing towards you or retiring never aim up or down more than 3 feet. A man (target) moving diagonally across your front halves the allowance for lateral movement.

CHAPTER III.

CARE OF ARMS—MECHANISM—TRIGGER PRESSING.

Daily Cleaning of the Rifle.

All the outside of the rifle should be gone over with a hard brush, paying particular attention to the gas escapes and slots. All frictional parts should be slightly oiled. Then the outside of the rifle should be gone over with an oily rag.

Cleaning before Firing.

The rifle should be dry cleaned before firing.

Cleaning after Firing.

The superficial fouling should first be removed by means of the pull-through and flannelette. Then from five to six pints of boiling water should be poured down the barrel from breech to muzzle.

Allow the rifle to rest for a few minutes so that any moisture which may be clinging to the interior of the bore may have time to evaporate. Dry clean the rifle and take it to the officer for inspection. When the rifle has been inspected, re-oil and clean it every alternate day for ten days after firing. If hot water is not available the rifle should be pulled-through with an oily rag, and hot water used on the earliest available opportunity.

The Use of the Gauze.

The gauze should never be used except when actual necessity demands it. The frequent use of the gauze is apt to scratch the interior of the bore, and shortens the normal length of life of the rifle. The permission of the Company Officer ought to be obtained before a man should attempt to use the gauze, and the officer determines whether the gauze should be used or otherwise. If the Company Officer decides that the gauze should be used, it should be well oiled and fit the interior of the bore tightly. (See M.R. 99.)

The Pull-through.

A pull-through and oil-bottle are issued to every man. The pull-through consists of a long piece of cord with a brass cylindrical weight at one end and three loops at the other end.

The first loop (i.e., the one nearest the weight) is used for the gauze. The second loop is for the flannelette. The third loop is in case of a jamb for drawing out the pull-through.

Cleaning Material.

The only material which should be used is the regulation flannelette. The oil is known as Russian petroleum or G.S. lubricating oil; paraffin or any other oil should not be used as a substitute. The above are a free issue, and are obtainable from stores.

The manner in which the flannelette should be used is as follows:—Pour a few drops of oil on the flannelette. Then knead it well into the flannelette by means of your forefinger and thumb. The flannelette

should be drawn through the bore in one clean motion, and care should be taken that it is a straight pull and not diagonal, as the latter results in what is known as "cord wear."

Care of the Rifle.

An officer or non-commissioned officer on barrack room inspection should take up a rifle at random and examine it for the following points:—

(1) See the action is released.
(2) See there are no dummies in the magazine.
(3) See the sights (dial and backsight) are at normal
(4) Cut-off in.

I very strongly advocate that disciplinary action should be taken with any man who neglects these points as many rifles are damaged owing to negligence of this kind.

If a man puts his rifle away with—

(1) The action cocked—The mainspring becomes weakened owing to it being compressed for such a long time.

(2) Dummies in the magazine—This weakens the magazine spring.

(3) The sights elevated—If the rifle falls the sights are liable to be broken or bent, rendering them defective.

One should also see that the safety catch is back, and that there are no plugs in the muzzle of the rifle. The latter leads to what is known as a bell-mouthed barrel, and consequent inaccurate shooting. It should be impressed upon every man that in case a pull-through breaks in his rifle, or if screws work loose, etc., he should report the matter at once, and take his rifle to the armourers' shop for repair.

Company officers should frequently compare the number on the bolt lever with the number on the bayonet boss, and see that they correspond as a precautionary measure against accident.

I think the best manner in which to learn mechanism is in the form of questions and answers. A skeleton rifle should be used, and the actual action of the mechanism followed step by step.

Q. What is the primary extraction?

A. It is the initial loosening of the cartridge in the chamber.

Q. How does primary extraction take place?

A. On the bolt lever being raised, the bolt is rotated to the left, the stud on the cocking-piece is forced back from the long to the short cam groove. This withdraws the striker about one-eighth of an inch as the bolt rotates. The steel lug on the bolt works down the inclined slot on the left side of the body. This withdraws the bolt one-eighth of an inch, thus causing primary extraction.

Q. How is the cartridge eventually ejected?

A. The cartridge being gripped by the extractor is drawn back with the bolt until it strikes the ejector screw, and is thrown out to the right.

Q. Where is the ejector screw?

A. Immediately in rear of the thumb clearance.

Q. How is the magazine charged?

A. By placing a charger vertically in the guides, then with forefinger round the cut-off and ball of the thumb on the base of the top cartridge with a downward sweeping motion the cartridges are forced into the magazine.

Q. What takes place on closing the breech?

A. The bolt on being pushed forward throws out the charger, the lower part of the face of the bolt head engages behind the upper part of the base of the top cartridges and forces it into the chamber. As the bolt goes forward the full bent of the cocking-piece is brought to bear against the long arm of the sear, which retains the striker and cocking-piece whilst the bolt travels forward, the mainspring being compressed between the collar of the striker and the back of the mainspring chamber in the bolt. The breech is finally closed by the rib on the bolt working over the resisting shoulder, and the steel lug working into the recess cut in the left side of the body.

Q. How is the cartridge finally exploded?

A. If the rifle is at full cock and the trigger is pressed, the two projections on the trigger bear on the lower arm of the sear successively, and cause the double pressure. The first pressure brings the nose of the sear to the bottom of the full bent, the second pressure releases the whole action. The mainspring carries the striker forward and explodes the charge.

Q. How is the shock of discharge taken?

A. Equally on both sides of the body; on the right by the steel rib on the bolt bearing against the resisting shoulder, on the left side by the steel lug bearing against the rear wall of the recess cut in the left side of the body. The energy of the discharge is thereby expended before it reaches the firer.

Q. What occurs if the bolt is not properly turned over and the trigger is pressed?

A. Two things are likely to happen—

(i.) The stud on the cocking piece either strikes against the rounded corner of the division between the two grooves, which causes the bolt to turn down and the breech to close automatically.

(ii.) The stud on the cocking piece may strike full against the division between the two grooves, which prevents the striker from going forward.

If the bolt lever be now turned down the whole action becomes locked automatically, as the nose of the sear is engaged by the half-bent of the cocking-piece, whilst the stud on the cocking-piece travels half-way down the long groove. Therefore, neither can the bolt be rotated nor the trigger be pressed until the action is again placed at full cock by the drawing back of the cocking-piece. The rifle is now ready to fire.

Q. How do you know if your rifle fires Mark VII ammunition?

A. By raising up the leaf of the back-sight and seeing the letters H.V. (high velocity) on the bed.

Testing Trigger Pressing by means of the Aim Corrector.

To face Page 29.

Teaching Trigger-Pressing.

To face Page 29.

Trigger Pressing.

In order to teach trigger pressing it is essential that a recruit should have both elbows rested. The best way to do this is with a table in the barrack-room and allow the recruit to sit down with his rifle rested on a sandbag, or a great-coat will do. The first step is for the instructor to ascertain if the recruit can bend his forefinger. Then the instructor explains the pull-off, emphasizing that it is a double pressure and that the first pressure should be taken immediately the butt touches the shoulder. The direction of the pull-off is next explained, as slightly upwards and diagonally across the small of the butt. The instructor then demonstrates by getting the recruit to place his forefinger on the trigger but without taking the pressure. The instructor places his hand over the recruit's and shows him how it is done.

The recruit then imitates by placing his hand over the instructor's and taking the pressure. It is admissible for the recruit or instructor to use the left hand when placing it over the hand, pressing the trigger if the latter is too large. The

recruit will then be practised in trigger pressing on an easily defined aiming mark, the instructor using the aim corrector. The object here is to teach the recruit to press the trigger without disturbing his aim.

Should the Le Gret aim teacher get broken or lost there is still another method left for convincing the recruit that his aim is incorrect. Get him to lay what he considers to be a correct aim. Then hold a piece of white paper in front of the muzzle of the rifle and ask him to take a full sight; take the paper away and he will see where his aim is on the target.

Demonstrating to Recruit that his aim is wrong.
(Aim-Teacher not available.)

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CHAPTER IV.

THE MINIATURE RANGE—RAPID FIRE—RAPIDITY OF AIM OR SNAPSHOOTING.

This is the second stage in the training of the soldier, and it is of the utmost importance that individuals at this step should have instructors who show more than ordinary ability in teaching musketry so as the man may reap full benefit from his instruction.

Such a variety of musketry subjects can be taught on the miniature range that I have decided to enumerate a few of them here:—

What can be taught.

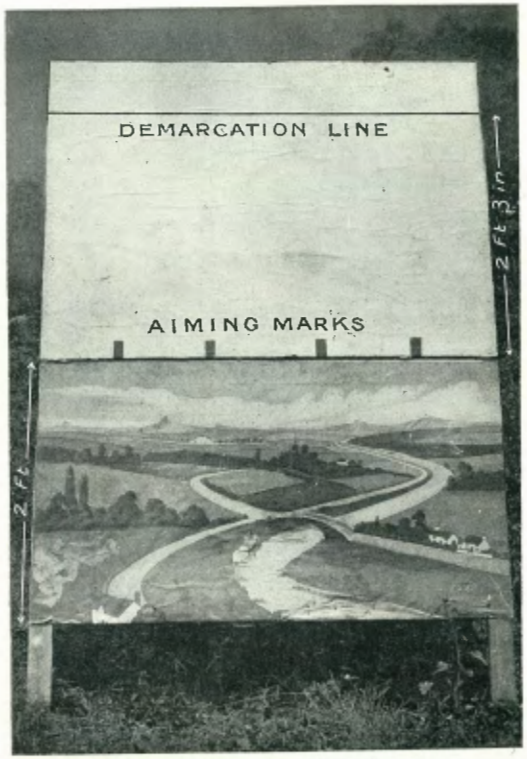
1. Grouping.
2. Application.
3. Rapid Fire (with specially fitted magazine).

4. Aiming off for wind and movement.
5. Trigger pressing.
6. Distribution of fire.
7. Military vocabulary.
8. Snapshooting.
9. Indication and Recognition (on landscape target).
10. Range discipline.
11. Fire Orders.

No man should be allowed to proceed to the ordinary open range until he has reached a good standard of efficiency here.

The sequence in which a man should be instructed at the miniature range:—

1. Explain the nature of practice.
2. Tell him position of target.
3. See that his sights are all right.
4. Ensure that he loads and unloads cleanly and rapidly.
5. Emphasize the necessity of pressing his trigger properly.
6. Watch the firer and not the target.
7. Make him declare his point of aim.
8. Inspect his arms at termination of practice.



Harmonization of Sights using a Hill-Siffken Target.

To face Page 33

9. Demonstrate his faults and apply a remedy.

During a wet day the miniature range can be very profitably utilized by company officers in the practice of "Fire Orders." The miniature rifles (A.T. Tubes) can be used with harmonized sights.

Definition of Harmonized Sights.

It is the tuning up of the rifles of a fire unit to fire at 1,400 yards and upwards, at 25 yards distance, on the long range sighting targets.

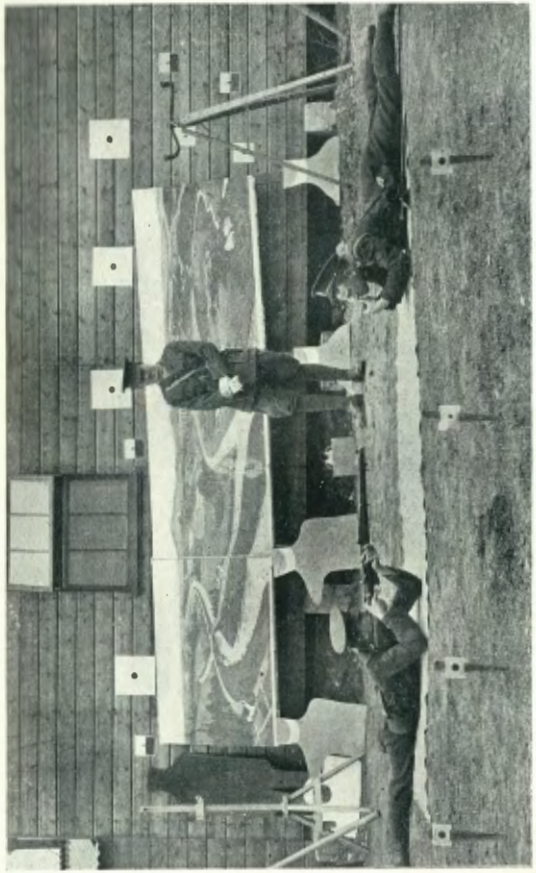
The manner in which sights are harmonized is as follows:—

An ordinary landscape target is cut down to 2 feet and is fitted with a sky-screen. The sky-screen consists of ordinary white paper stretched on a frame the same dimensions longitudinally as the landscape target. A line about 2ft. 3in. from the bottom of the sky-screen is drawn across the white paper. The firers then adjust their sights until they obtain the required elevation by actual

experiment; that is they aim at aiming marks on the bottom of the sky-screen and they increase the elevation until their shots are on the line or in close proximity to it. The reason why the line is 2ft. 3in. from the bottom of the sky-screen is so that the firers, when actually firing at the landscape target, will not damage it, as their shots will be recorded on the sky-screen above. Any piece of wood can be improvised as a measuring rod, so as to ensure that the line on the sky-line will be of greater depth than the landscape. Superficial observation will show if fire effect has been obtained or not. Measuring rectangles can be obtained, and the fire effect calculated in this manner leads to very keen competition and consequent increased interest.

Rapid Fire, How Taught.

1. EXPLANATION OR ILLUSTRATION.—I am going to teach you rapid fire. Now, what I mean by rapid fire is—a man firing at his best rate with reasonable accuracy. Show the recruit how it is carried out by placing eye disc in the ground and illustrating.



Teaching Rapid Fire or Snapshooting.

To face Page 34.

2. DEMONSTRATION: POINT OUT THE ESSENTIALS—

(1) Load from shoulder.
(2) Count each round.
(3) Close the pouch.
(4) Load and unload rapidly.
(5) Slightly tilt the rifle to the right to facilitate ejection.

3. IMITATION. — Make recruit do it. When resting give him the reasons.

4. INTERROGATION OR TEST.

Q. Why do I load from the shoulder?

A. To save time.

Q. Why do I count the number of rounds?

A. So as not to be caught with an empty magazine.

5. TEST.—The test for rapid fire is getting off 10 rounds within a minute; eight of them must be good shots. Must load from the pouch each time and do up the pouch. The target will be an aiming disc held to the instructor's eye.

Snapshooting

is taught in a similar manner to rapid fire with few exceptions.

1. DEFINE SNAPSHOOTING.

Snapshooting is getting in an effective shot within the shortest possible time.

2. DEMONSTRATE IT AND POINT OUT THE ESSENTIALS.

(1) Declare your point of aim.
(2) Unload rapidly.
(3) Eyes on target.

3. IMITATION.—Hold eye-disc to your eye. Give the recruit seven seconds for his first shot, then six, and gradually cut down the time until you reach the standard 4 seconds a shot. Make recruit declare his point of aim, etc.

4. INTERROGATION OR TEST.—*Test.* The recruit must get off each shot within 4 seconds and declare his point of aim. Both these tests are carried out in the prone position.

CHAPTER V.

VISUAL TRAINING AND JUDGING DISTANCE.

It is of paramount importance that the greatest care should be exercised in the training of the eyesight of the soldier for military purposes, as undeveloped powers of observation render a man a far less valuable asset than the individual who has been trained to recognise and describe features of military importance which to the untrained eye convey nothing.

In modern warfare great attention has been paid to invisibility, which calls for a very high standard of training in order to recognise service targets.

The standard to be aimed at is that of the poacher or shikari. The former's avocation, albeit, is necessarily illicit, it trains him to recognise game and enables him to earn a livelihood where the ordinary man would fail. The latter has very

highly developed powers of observation which render him invaluable on a shooting expedition, and the surroundings in which he has been brought up render trained eyesight an absolute essential for self-preservation.

The great difficulty experienced with the average recruit is his total lack of military vocabulary; also large industrial centres such as London, Birmingham, and Manchester furnish a vast number of recruits whose eyesight has been of very secondary importance in the employment which they follow.

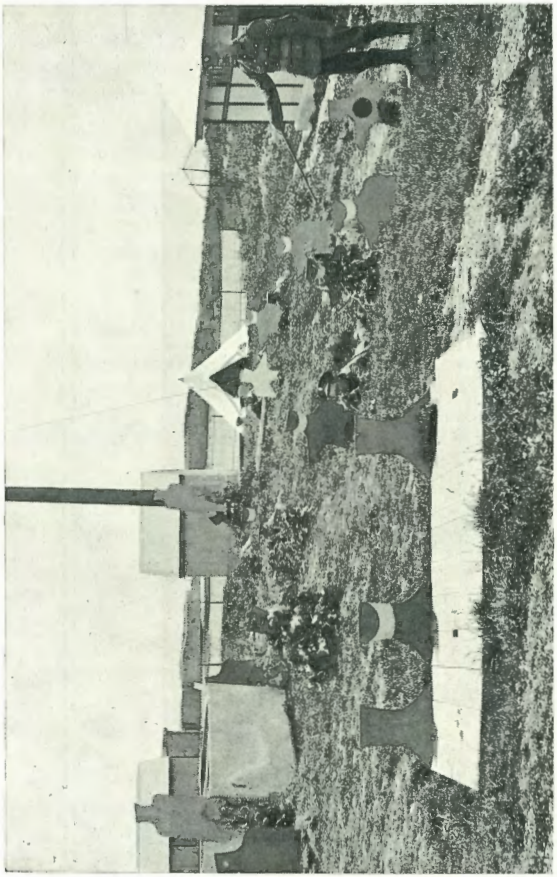
Instruction in visual training should commence in the early training of the recruit, and should be progressive and practised throughout his army career.

Visual training can be taught in four stages.

The First Stage

can be carried out in barracks.

(i) Get your squad to count the number of panes in the windows of a building.



2ND STAGE OF VISUAL TRAINING.
Instructor explaining to squad men not making proper use of cover. The other men are not visible from a distance of 10 yds. Note targets of different size, position, shape and colour.
To face Page 39

(ii) Or to distinguish between the different ranks on the barrack square, such as lieutenant or second-lieutenant, corporal or lance-corporal.

The Second Stage.

Select a piece of open ground, and place out a number of service targets in different positions and of different colours, sizes, and shapes. Define the limits of your sector.

Get squad to count the number of targets and describe their position, size, shape, and colour. Explain the effect of light, and when target and background are of similar colour.

Pointing is not permitted, men must use their eyes. Targets should be placed out well in advance of the time appointed for the lesson to take place.

Some targets should be partially concealed in a natural cover if possible.

The Third Stage.

Take the squad into the country and choose as your object for the lesson:

(i) A Hedge, preferably on the skyline for better definition. Describe minutely what you see in the hedge. For instance, "on the right of the hedge there is a prominent bush, the hedge then runs uniformly for about 20 yards. There I see a sapling, next to that a gate with some wire netting, further on a large bushy tree," and so on. The instructor will then make each individual in turn describe likewise what he saw.

(ii) Select an area of ground, such as a field, and make squad describe accurately what they see, paying particular attention to features of military importance, such as:

(a) Covered avenue of approach to a position.
(b) Folds in the ground which would facilitate the advance and afford cover from fire and view.
(c) Prominent objects, such as isolated trees, which would serve as range marks.
(d) Low walls or ditches which would be suitable fire positions.
(e) Obstacles such as fences, high banks, or thick undergrowth, which would

impede the advance. When men are fairly proficient they should be practised in memorising the area of ground, then turn away from it and describe it.

The Fourth or Final Stage.

RECONNAISSANCE OR ROAD WORK.—When on a route march, at the first halt, ask your platoon or company what they noticed on the right-hand side of the road between two points, say, from the point of assembly to the first halt. Inns seem to be given great prominence by the men, but there are other things, such as telegraph poles, letter boxes, railways, road junctions, etc., which are of military importance.

Men should be henceforward practised in recognising targets which they are likely to meet on service. This can be carried out by mutual arrangement between instructors, one squad taking cover whilst the other squad endeavours to discover their position. The use of field glasses should be taught. An area of ground should be selected, first examined by the

naked eye, and the detail of the country then examined with the glasses. These lessons should be carried out as far as possible in the normal service position (prone position). A demonstration can be carried out on an ordinary classification range to impress upon recruits why we select 600 yards as the limit of individual field fire, and why fire is controlled beyond that range.

Place fatigue men out at 600 yards, and allow them to fire a few rounds of blank. Then ask the squad to try and locate them; if they succeed, impress upon them the very small target a man offers at 600 yards in the prone position.

Visual Training by Night.

One man of a platoon should march away, and be stopped by voice or prearranged signal as soon as he is out of sight. He should call out the number of paces he has taken. The same man should then advance towards the platoon from some distance further off, and be stopped as soon as he becomes visible, later counting his paces to the platoon.

It should be explained that:

(a) Ability to see in the dark increases with practice.
(b) Objects are more visible when the moon is behind the observer than when it is in front of him.
(c) An observer may stand up when he has a definite background, and should lie down when he has not.

When the men have been practised in observing a man approaching at a walk they should be similarly practised in observing a man who is endeavouring to approach unseen. I.T., s. 113 (2) (i).

Judging Distance.

There is such a very close similarity between judging distance and ranging that they may be safely regarded as synonymous terms. There are many methods of ascertaining the correct range to any point, and the most common of these is judging distance by eye. Foreign countries look upon judging distance as a kind of national pastime, and by continual practice they become very efficient.

Whole villages turn out on Sundays to judge distance, and the best individual receives some monetary reward. The lord of the manor is generally the best individual as he adopts the precautionary measure of having the ranges taken beforehand and recorded for his information. However, with his wonted liberality he bestows the prize on the next best, who has to judge under less fortunate circumstances.

Judging distance is taught by systematic and progressive measures. Guessing must never be allowed. The following method of teaching judging distance may be adopted for general guidance.

The First Stage.—The unit of measure.

HOW CARRIED OUT.—Select a piece of level ground and measure off carefully 100 yards. Place a flag at this point; then get squad to judge the distance to the flag. When they have judged tell them the correct range (i.e., 100 yards) Then impress upon them the necessity of visualising what 100 yards look like. It

is not sufficient alone to do this; you must carefully measure off the 100 yards by means of a chain or tape in front of the squad, so that they may satisfy themselves as to the distance. If you have no means of measuring you can improvise another method by pacing off the distance accompanied by a few of the squad, allowing 120 paces for the 100 yards. Having placed flags at other distances—say 200 and 300—ask the squad how many times the first distance will go into them.

The Second Stage.—The appearance of the object.

HOW CARRIED OUT.—Take the squad on the classification range if possible or any piece of open ground, and place out fatigue men at various ranges and show the squad what they look like. The effect of light and colour can be exemplified here if some of the fatigue men wear canvas and the others service dress.

The extreme range here should not be more than 600 yards, as this is the limit of individual field fire. For convenience

the men can be placed at 200, 300, 400, 500 and 600 yards.

The instructor should emphasize especially at what range a man's shoulders commence to taper and the appearance of the head at the limit of individual field fire (600 yards). This practice should be carried out under different weather conditions in order to accustom the men to make allowance for atmospheric changes.

When men are familiar with this stage of their instruction fatigue men should be placed out and within a sector which is described to the squad. A fatigue man fires on a given pre-arranged signal and exposes himself for three seconds. The squad judge the distance and note the man's appearance, whom they have located by sound.

Third Method.

KEY RANGE.—Give the squad the distance to a prominent object (e.g., isolated tree) half-way or three-fourths-way to the object to be judged upon, and using this as a key range, they should be made

to calculate the correct distance. Key ranges taken from maps are not reliable.

Fourth Method.

BRACKETING SYSTEM.—This is used when judging upon stationary objects. Assume the distance is not more than 1,200 or under a 1,000 yards. Then take the mean of those two, which would be 1,100 yards. This method is fairly reliable, but much is dependent upon the individual applying it.

Fifth Method.

BY SOUND.—From the moment the flash is seen count 11 (1, 2, 3, 4, etc.) in three seconds, until you hear the sound of discharge, then stop. Each number equals 100 yards, as sound travels at the rate of 1,100 feet per second, or 1,100 yards in three seconds, as three feet equal one yard.

Sixth Method.

BY OBSERVATION OF FIRE.—By observing the result of the strike of bullets.

This is the most reliable method of all and absolutely accurate, as it makes allowance for the vertical and lateral error of the day.

DEFINITION OF THE ERROR OF THE DAY.—The Error of the Day is the difference in yards between the correct range and the sighting elevation required to hit the target.

THE VERTICAL ERROR is due to heat and cold.

THE LATERAL ERROR.—Due to wind, which deflects the bullet from its normal course.

Methods such as taking the bolt out of one's rifle and seeing how many men will fit in the interior of the bore is not a practical method, as it cannot be used on service and should not, therefore, be used as an aid in judging distance. Judging distance tests should take place periodically and a faithful record kept by the company officer of every man's estimate.

How Test should be carried out.

Four distances should be given, two natural objects and two fatigue men placed out with blank ammunition. One distance should be above 800 for trained men and for non-commissioned officers and officers one above 1,400 yards. This distance is only necessary to prevent guessing, and is not reckoned on the man's average.

Recruits judge up to 600 yards.

Trained men judge up to 800 yards.

Officers and non-commissioned officers judge up to 1,400 yards.

It is an easy matter to work out the percentage of error of an individual by the following rule and formula.

RULE.—Multiply the error by a 100 and divide by the correct range. This will give the percentage of error in a single distance. In order to find out the total add the percentages and take the average.

For instance, suppose the correct range to be 1,000 and the estimate to be 1,050, that obviously would mean an error of 50

yards. That would be:—

$$\frac{50 \times 100}{1000} = \frac{5000}{1000} = 5\ \%\ \text{of error.}$$

Supposing in the other two distances the percentage of error was 10% and 6% respectively, add the three percentages and divide by 3. The total result would be 7% of error.

5%
10%
6%
3)21%
7%

The percentage of error allowed on judging distance is 20%.

FORMULA.

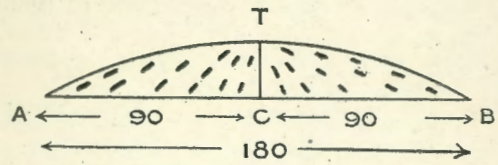
$$\frac{\text{Error} \times 100}{\text{Correct range}} = \text{Percentage of error.}$$

PERMISSIBLE ERROR.—In judging distance one is apt to find such terms as the Permissible Error.

Definition of Permissible Error.

It is half the depth of the effective beaten zone. I shall prove this by means of a few diagrams. We know as the result of actual experiment that the beaten zone at 1,000 yards is 180 yards long by 14 feet lateral dispersion. Assuming that the shots fall equally on both sides of the target we get the following:—

1



T.=Target.
A B.=Length of zone (180 yards).
A.C.=½ length of zone (90 yards).

Diagram 1 shows what would actually happen if the range was correct.

2

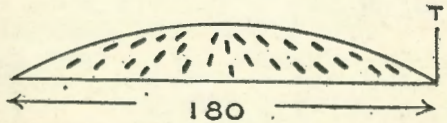


Diagram 2 shows what happens if the range is under-estimated 90 yards (half the depth of the effective beaten zone). The zone of fire would be pushed back (or fall short) 90 yards (half the depth of the

effective beaten zone), but you would still obtain fire effect as the fringe of your cone of fire reaches the target. Therefore the permissible error is half the depth of the effective beaten zone.

In the same way, when ranging is carried out with the aid of mechanical means, that is with range-finding instruments, the following is the probable error which must be allowed for:—

Name of Instrument.	Probable Error.
Barr and Stroud	3%
Marindin	3%
Mekometer	5%
Key ranges	10%
Judging Distance by Eye	15%

Judging distance should be carried out under both adverse and favourable weather conditions so as to practise men in making allowance for any circumstances which may arise.

Chapter VI.

RANGE PRACTICES—ANALYSIS OF FAULTS, ELEVATION, WIND AND MOVEMENT TABLES.

Range practices are the third step in the training of the soldier, and they are very useful in teaching the soldier the powers and limitations of his rifle.

However, range practices carried out under indifferent instructors fail to fulfil the purpose for which they were intended.

Advantages of Range Practices.

Advantage of Being Carried out with Ball Ammunition.

1. They teach a man to fire with accuracy.
2. They teach him to make allowance for wind and movement.
3. They teach rapidity of aim (snap-shooting).

4. They teach a man rapid fire.
5. They teach him grouping, which is essential in collective field fire.
6. They show him errors (if any) in his rifle at known ranges.
7. They are a test of elementary training.

Disadvantages of Range Practices.

1. The range is known.
2. Practices are not fired under service conditions.
3. The target is of huge dimensions.
4. Target and background are of different colours.
5. Each shot or series of shots is marked.
6. Each target is plainly indicated by a number.
7. There are supplementary aids (such as flags).
8. They are carried out in comparative comfort.
9. There are no disturbing influences.

However, they are only a means to an end, the main object being the training

of the soldiers for war, which is completed in the later stage of Field Practices.

The Duties of an Officer on Butt Duty (para. 485, M.R., Part I), are:—

1. See that the targets are of the proper dimensions and sufficiently clean to enable shot-holes to be easily distinguished.

2. See that the butt appliances are in good working order and look-out men are at their posts.

3. Explain all local orders to the markers and ensure their observance.

4. Detail two markers for every target and a man for the telephone.

5. Detail one officer to every four targets, assisted by a non-commissioned officer not below the rank of corporal.

6. Ensure that no target is lowered without permission of the superintending officer. In slow practices the target will not be lowered at all until the officer is in front of it. In rapid practices the target will be lowered to half-mast at the end

of the time allowed, and the markers ordered to stand back as far as possible until the officer is in front of it.

7. To regulate the exposure of moving and vanishing targets according to the instructions laid down.

8. All targets should be at half-mast during cessation of fire.

9. To see the marking is accurately performed.

10. Must personally check the target of each firer and enter the value of all hits in the register (A.F. B 190 or A.F. B 68) in ink; occasional shots will be entered in the columns provided for the purpose. No erasure is to be made. If alteration is necessary a fine line will be drawn through the figure, the correct value written against it, and the amendment verified by the officer's initials.

11. If more hits, including ricochets, are found on a target than rounds fired, to deduct from the score the value of the highest hits. (See para. 485 (x.)).

12. To mark off each hit on the target with a red pencil before entering its value

in the register and to ensure all shot-holes are duly patched.

13. In rapid practices, after each check, to cause the number of hits of each value to be signalled on each target.

14. To see that there is an adequate supply of paper, paste and brushes.

15. On the conclusion of a practice to rule a line diagonally across the unused spaces in the register, before signing the certificate at the end.

The above duties are laid down in Musketry Regulations, Part I, paras. 485, 486, 487.

The Duties of a N.C.O. on Butt Duty.

1. He will assist the superintending officer in all his duties.

2. He will be responsible that all fatigues are properly carried out by the butt party.

3. He will arrange that the fatigue party detailed for butt duties will be at the butts in sufficient time and have everything ready for the commencement of the practice when the party arrives.

4. He is responsible for the cleanliness of the butts.

5. He must see the telephone is in working order and make other arrangements accordingly.

6. He will report the shortage of any marking discs, flags, etc.

7. He will ensure that the markers are proficient in their duties and give them instruction if necessary.

8. He will see that the red flag is in position on the butts during the cessation of fire and not lowered without permission of the superintending officer.

The Duties of an Officer Superintending at the Firing Point (para. 483, M.R., Part I).

1. Detail the order of firing on his register.

2. See that each man on his roll fires at the target to which he has been detailed.

3. During preliminary and instructional practices to allow nobody at the

firing point but the officers, the instructors and the men actually firing.

4. To check his nominal roll (A.F. B 189) periodically with the detail firing to guard against impersonation.

5. To detail a non-commissioned officer or man to send or receive messages by telephone or by signal.

6. During preliminary and instructional practices to detail a non-commissioned officer to each firer as an instructor and to superintend his firing.

7. To see that there is no coaching or instructional aids given to non-commissioned officers or men during the classification practices. (Part III, Table B.)

8. See that the authorised amount of ammunition only is expended.

9. Ensure the practice is carried out according to the strict letter of the regulations and that local orders are obeyed.

The Duties of an Instructor at the Firing Point.

1. Explain the nature of the practice.

2. See the man adopts the correct fire position.

3. Give him his ammunition and make him load from the pouch.

4. Tell him the range and allowance to make for wind, etc.

5. Tell him the number of his target.

6. Watch the firer and not the target.

7. See each shot or series of shots is properly signalled.

8. Make the man think for himself.

9. Strict attention to all the points of elementary training.

10. Inspect arms at termination of practice.

These duties are only laid down as the result of actual experiment for general guidance, and may be subject to alteration in order to suit local or individual requirements.

When a firing party arrives on the range it is customary for the party to ground arms about 30 yards in rear of the firing point; then turn about and stand clear of their arms. When the order of firing has been detailed men who are not actually firing or next to fire should be practised in the use of field glasses.

"Those men who are not actually engaged in firing should receive instruction in ground reconnaissance, use of the eyes, use of field glasses, range-finding and description of ground while waiting behind the firing point."

M.R., Pt. I, para. 467.

Number of Rounds to be Fired Daily.

In the Regular Army and Special Reserve not more than 15 rounds should be fired in one day except in classification practices, when 25 rounds may be fired if necessary. M.R., Pt. I, para. 441.

Range Discipline.

1. No soldier equipped with a rifle is permitted to fire with any but his own.

M.R., Pt. I, para. 458.

2. No sighting shots are allowed.
M.R., Pt. I, para. 459

3. No man will load or assume a firing position until the senior officer present has ordered the practice to commence. After firing men will return to the loading position, but will not open the breech in the slow practices until the last shot has been signalled. If it is necessary to suspend firing all men who are in position will apply the safety catch (or unload if no safety catch is provided) until the order is given to resume the practice.
M.R., Pt. I, para. 463.

4. Aiming or snapping during target practice may only take place from the firing point after the red flag has been lowered. M.R., Pt. I, para. 464.

5. No one is allowed at the firing point except the men actually firing, the instructors and officers. All non-commissioned officers and men not on duty at the firing point will ground or pile arms and remain not less than 30 yards in rear of the firing point.
M.R., Pt. I, para. 465.

6. Omission to fire rounds allotted and failure to fire during an exposure or run, in vanishing and moving practices, will entail forfeiture of the rounds that should have been fired and misses will be recorded for them.
M.R., Pt. I, para. 454.

7. Dependence on the sling will be discouraged, and it will not be used for steadying the rifle in range practices.
M.R., Pt. I, para. 457.

8. The Officer Commanding a company or party is responsible that arms and pouches are examined before men leave the firing point.
M.R., Pt. I, para. 489.

All men should know what allowance to make for wind and movement up to at least the limit of individual field fire (600 yards). They should also be taught the vertical rise they would get on their targets by the alteration of their sights from one range to another.

Elevation Table.

Range at which Firing.	Range Sights raised to.	Vertical Rise on Target.
200 yards.	300 yards.	6 inches.
300 yards.	400 yards.	12 inches
400 yards.	500 yards.	20 inches.
500 yards.	600 yards.	30 inches.

The way in which one arrives at this result is by multiplying the initial figures of the ranges concerned. But the difficulty may arise that one may have to alter the sights from, say, 200 yards to 400 yards. The procedure in this case would be as follows:—

Multiply the initial figures of the ranges concerned—that is, 200, 300 and 400—by the initial figure of the first range, $2 \times 3 = 6$, $2 \times 4 = 8$; then add the results—that is $8 + 6 = 14$". Inches vertical rise on the target.

This rule is applicable to all ranges and Mark VII ammunition.

The Movement Table.

Object.	Allowance.	Remarks.
A man walking ...	1 foot.	Per 100 yds.
A man running ...	2 feet.	Per 100 yds.
A horse trotting ...	3 feet.	Per 100 yds.
A horse galloping .	4 feet.	Per 100 yds.

The above allowance is the amount one must aim in front of the moving target in order to obtain an effective shot.

The way to aim at a moving target is as follows:—First take the 6 o'clock aim on the target; then, taking care to keep the 6 o'clock line, carry the rifle to the required allowance in front of the target and fire whilst the rifle is still on the swing. Halve the above allowance for a target moving diagonally across your front.

Wind Table.

Rate and Description of Wind.	Range and Deflection.				
	300 yds.	500 yds.	1,000 yds.	1,500 yds.	2,000 yds.
Mild. 10 miles per hour.	1 ft.	2 ft.	3 yds.	6 yds.	12 yds.
Fresh. 20 miles per hour.	2 ft.	4 ft.	6 yds.	12 yds.	24 yds.
Strong. 30 miles per hour.	3 ft.	6 ft.	9 yds.	18 yds.	36 yds.

For any of the above halve the allowance if it is an oblique wind (that is, blowing from two or ten o'clock, or five or seven o'clock).

The winds are classified into mild, fresh, and strong winds for general purposes, and are not aerometrically correct. One should particularly notice that from 1,000 yards and upwards the allowance is in yards. The use of the wind-gauge may be taught, but it should be emphasized that it is not a practical method which can be used under service conditions, the alternative being to aim into the wind in order to counteract its effect. In order to find out how many divisions (right or left) one would require on the wind-gauge the following method may be employed: Multiply the number of feet of allowance for wind by 2 and divide the product by the number of hundreds of yards in the range.

For instance, a fresh wind at 500 yards. The allowance is 4 feet deflection according to wind table.

$$\frac{4 \times 2}{5} = \frac{8}{5} = 1\frac{3}{5} \text{ divisions.}$$

When a man has failed to group on the range his fault must be discovered, and the way to do this is by "The Analysis of Faults." The analysis may be remembered by the simple mnemonic R.A.T.S.

"Analysis of Faults."

RIFLE.—Aim (by means of triangle of error). Trigger pressing (by means of aim corrector). Sight.

1.—The first thing to do is to have the man's rifle tested by an expert shot, as the recruit will probably think it is the rifle which is inaccurate.

2. Have his aim tested by means of the triangle of error.

3. Test his trigger pressing (with aim corrector).

4. Test his eyesight. Get him to read small print from a book and to count the number of sheep on a hillside.

If you cannot find his fault in any of these four it is simply a case of nerves, and the man must be handed over to the gymnasium sergeant to undergo a course of

gymnastics. He should get plenty of rope-climbing or other such exercises in which confidence is an essential factor. Range practices terminate the third step in the training of the soldier.

CHAPTER VII.

INDICATION AND RECOGNITION —FIRE ORDERS.

In order to obtain fire effect there must be that mutual understanding between the fire unit commander and the fire unit, so that when the fire leader indicates the men will recognise their target without undue delay. However, this state of efficiency requires a great deal of preliminary instruction before that standard can be reached. Indication and recognition, fire orders, and fire discipline are so closely allied that the success of one is dependent upon the other.

Indication and recognition should be taught by easy and progressive stages.

Indication and Recognition.

1. Military vocabulary.
2. Prominent object.
3. Finger-breadth method.

4. Clock-face method.
5. Finger-breadth and clock-face methods combined.
6. Auxiliary aiming mark.

These are the stages in which the recruit must be taught. The first thing to do is to teach him the military signification of terms used in connection with the discharge of his duties. He should be able to know the difference between a salient and a spur, the different names of trees, plants and shrubs, and the various kinds of land, whether arable or otherwise. At the end of this book will be found a short list of military terms which are applicable to the training of the soldier and should form part of his military knowledge. When a man has been thoroughly well versed in military terms the more practical side of indication and recognition can be taught. Secure some rifle rests and tripods and take squad into the open.

1st Stage.

PROMINENT OBJECT.—First of all give them a prominent object (such as an iso-

lated bush on a sky-line) and get them to lay their rifles on it. Then check each man's aim.

2nd Stage.

FINGER-BREADTH METHOD.—Take an object a little more difficult to describe, say two fingers right of bush and check each man's aim as before.

3rd Stage.

CLOCK-FACE METHOD. — Four o'clock from bush a house with red roof. Same procedure as before.

4th Stage.

FINGER - BREADTH AND CLOCK - FACE METHODS COMBINED.—Two fingers 5 o'clock from house. A gap in hedge. Check each man's aim and criticise.

The auxiliary aiming mark is a means of indirect fire.

The actual target you intend to engage is not indicated to the fire unit, but a different aiming mark, which, owing to

existing conditions, would allow your cone of fire to fall on the real target and so develop fire effect. For example, supposing the range is 500 yards with a strong left wind blowing. The allowance for a strong wind at 500 being 6 feet, you would direct your fire on some prominent object 6 feet left of the target you wanted to engage. The finger-breadth method is not so practical as one might wish it to be since the anatomical developments of individuals are so widely different. One man would probably possess a hand like a ham and another man possess a very thin hand; two finger-breadths to one might possibly convey a hand-breadth to another. Another point against it—a firing line composed of uplifted hands would form a very vulnerable target. The disadvantage of the clock-face method is it cannot be used on flat country. Simplicity with no unnecessary detail is the best method for indication and intelligent interest on the part of the fire unit for recognition.

Fire Orders.

A fire order is an order given by an officer or non-commissioned officer in relation to fire. Fire orders are divided into three main sub-heads:—

(1) Fire Organisation Order.
(2) Fire Direction Order.
(3) Fire Control Order.

FIRE ORDERS.

Fire Direction Orders. | Fire Organisation Orders. | Fire Control Orders.

A FIRE ORGANISATION ORDER—Is the result of the directions of a senior officer in the placing of the different arms of the service under his command (artillery, cavalry, machine-guns, infantry), in order that he might obtain the maximum fire effect from their dispositions.

A FIRE DIRECTION ORDER—Is an order given by an officer or non-commissioned officer in command of more than one fire unit. It contains nothing in the nature of an executive word of command.

A FIRE CONTROL ORDER—Is an order given by an officer or non-commissioned officer in command of a fire unit; it contains the executive word—Fire.

THE ESSENTIALS OF A FIRE ORDER.

(1) The range.
(2) The point of aim.
(3) Number of rounds to be fired.
(4) The rate of fire, whether deliberate or rapid.
(5) The executive word—Fire.

The first thing to give is the range, next that part of the target which you intend to engage (point of aim), then the number of rounds must be named, whether 2, 3, or 4, and whether slow or rapid, finally the word fire, which must be as loud as possible.

THE METHOD OF GIVING A FIRE ORDER.

(1) With decision, in order to inspire confidence and exact prompt obedience.

(2) It must be loud enough for the whole unit to hear.

(3) There must be a pause between the different stages of the order, so that everybody concerned may understand what is expected of them and act upon it.

(4) It must not contain any unnecessary detail which may lead to confusion.

(5) The position of the fire leader must be the same as the firing line.

(6) It must be defined and unmistakable.

(7) It may be given by signal or passed.

(8) The word "Fire" must be simultaneous and as loud as possible.

Fire unit commanders should avoid as much as possible the repetition of the point of aim or sighting elevation if the target has not changed after a pause in the firing. The number and length of words will be dependent upon (1) the general situation; (2) the visibility of the target. A fresh development in a phase of the fight will usually require new orders, but if the situation remains unchanged then only orders for opening or ceasing fire will be necessary. Such expressions as "carry on" will not be used, but the order "Three rounds—continue" will be sufficient.

If there is only a slight modification in the disposition of the enemy, alteration of the sighting elevation will possibly be required. If the situation can be anticipated preparative orders should be given so that when the target becomes visible the executive word "Fire" only will be necessary. For instance, your scouts bring in information that cavalry are formed up in rear of a wood on your right front, and they are preparing to launch an attack on your right, in order to endeavour to turn your right flank, you would give out the following order:—800, quarter right, wood, when cavalry appears round extreme right edge of wood, five rounds rapid. When the cavalry appears all you would require to give would be the executive word "Fire." This is known as an anticipatory fire order.

Anticipatory Fire Order.

An order given by a fire leader who anticipates the movements of the enemy.

Napoleon's success as a general was largely dependent upon his powers of foreseeing events. He provided for all possible contingencies and made preparations to meet them in the event of their development.

There is such a thing known as a hasty fire order. The enemy suddenly appear and are visible to the fire unit. The order would be according to the tactical formations of the enemy. Supposing they were advancing in column of route towards you. The only order required would be "1,250—advancing infantry—on leading section—5 rounds—rapid—fire." A target of this kind would justify the opening of rapid fire as the enemy are in vulnerable formation and would deploy immediately on coming under fire.

The passing of fire orders should be practised daily in extended formation by companies.

To show how ridiculous an order can be made in transit I will quote an incident which actually happened on man-

œuvres. The message, "Send up reinforcements," was verbally sent from the firing line to the local reserves in rear. When it reached the reserves it was turned into "Can you lend me three-and-fourpence." During company training company officers should always take with them "pole targets" for the practice of their platoon commanders and section commanders in fire orders.

In the Defence.

(1) Make a range card.

(2) Give out descriptive points.

HOW TO MAKE A RANGE CARD (*vide* diagram).

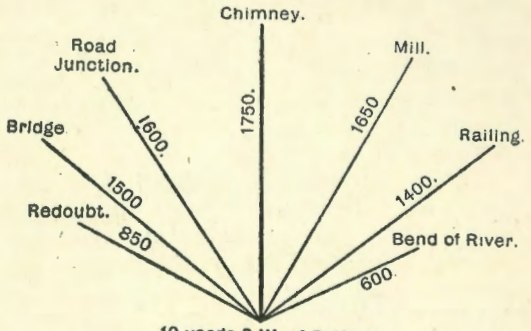
(i) The first thing to do is to describe accurately by compass bearing if possible the point where you are making the range card from.

(ii) Choose some prominent object in the landscape and holding your card in line with it place a pencil-mark on the card where you think it would be. Write the name of the object in block type and

the range on top of the ray. Join the two points together and let the line be heavily defined as it constitutes your main ray.

(iii) Take some other objects on the right and left of your main ray and ensure that the lines are not so heavy as the main ray. In order to get these other subordinate rays one must observe the following:—You must get the point where you are standing and the first object in the same straight line. Then the positions of other objects are placed in relation to the main ray. For each fresh object you take you must have the point where you are standing and the first object in the same straight line, then the position of the new object is placed in relation to the first object taken.

Range Card.



The following principles will be observed:—

1. All ranges will be accurately taken.
2. The main ray will be thicker in comparison to the subordinate rays.
3. The lettering will be in block type.
4. Objects must be stationary or natural features of country.

Range cards will be found useful by infantry when occupying posts or positions

of any kind, including outpost positions; they should be handed over to relieving units. Objects in or near the position which might assist the enemy in ascertaining the range should be removed if possible. I.T., s. 129, para. 3.

DESCRIPTIVE POINTS.

Always given out in the defences. They are the selection of prominent objects on the landscape and in fire orders facilitate indication and recognition. One must first strictly define the limitations of the sector of ground the fire unit has to watch prior to giving out a fire order in the defences. Then give out the following descriptive points:—

EXAMPLE: The sector of ground you will have to watch will be from windmill on the left to church on the right. Your descriptive points will be:—

(i) Straight to your front a tall chimney that will be known as Chimney.

(ii) Quarter right a church, that will be known as Church.

(iii) Half left farm building, with red roof, that will be known as Farm.

Now you have your three descriptive points: (i) Chimney, (ii) Church, (iii) Farm, and fire can be brought to bear on any part of your sector in a very little time by means of these auxiliary aids.

For instance, you were being attacked from half left of your position; all you would have to say would be "Farm"; that would immediately focus the attention of your command in the direction of the enemy's advance.

In the Attack.

(1) Give out a frontage.
(2) Make a key range.

Key Range.

Intervening Ranges.	Objective.	Correct Range.
0	Hedge between Mill and Bridge.	1,800
400	High Bank	1,400
600	Brook	1,200
800	Barn	1,000
1,200	Mill	600
1,400	Copse	400

POINT OF ASSEMBLY.

In making a key range great accuracy should, if possible, be exercised in ascertaining the range. In the event of no range-finders being obtainable the mean of the estimate of the unit should be taken for each distance and duly recorded. A plain postcard is very suitable for making a key range. Divide it into three columns, and in the centre column write down the position which may be occupied by the enemy. On the right-hand side the correct range and on the left-hand side the intervening ranges. The intervening ranges are found by subtracting one range from another on the right-hand side. The key range is only used in the attack and will be of great assistance to the fire unit commander in controlling his fire. You will notice that on the top left-hand side the range is registered as zero, that is because on reaching that point the objective has been reached. The correct ranges are the ranges taken from the point of assembly. The distance you are away from your objective can readily be ascertained by

glancing at the left column. For instance, when you reach the copse you know you are within effective range and that you have advanced 400 yards; similarly when you reach the brook you know you are at close or decisive range, and that you have advanced 1,200 yards from the point of assembly. In the attack descriptive points are not given out, but a frontage.

EXAMPLE: Your frontage will be from farmhouse on the left to haystack on the right. It is absolutely essential that the limits of the frontage should be very strictly defined, as other units may be operating on your right and left.

There are Two Rates of Fire:—

(1) Slow Fire.—A man firing at the rate of 6 rounds a minute.

(2) Rapid Fire.—A man firing at his best rate with reasonable accuracy.

Kinds of Fire.

(1) Concentrated Fire.—The application of fire to a given point.

(2) Distributed Fire.—The application of fire to a linear target (such as a trench of men).

Its object is to neutralise the enemy's fire.

It can be employed { By companies. / By platoons. / By sections.

PARTIAL DISTRIBUTION—Is the distribution of fire on parts of a linear target, which may have been decided upon after consultation between fire unit commanders, leaving no part of the target uncovered by fire, the whole target being too long for the fire to be effectively controlled by one fire leader.

Cease Fire.

The order to cease fire does not mean "Unload." The order "Cease Fire" means that a fresh charger is taken from the pouch and the magazine is re-charged and the safety catch applied. As a matter of fact, officers from the front say it is far better to say "Stop Firing" instead of "Cease Fire," as the latter command is so easily confused with the word "Retire."

Combined Sights.

It is the employment of two different elevations by a fire unit. Half 50 yards over-estimated, half 50 yards under-estimated.

THEIR OBJECT.—They artificially increase the depth of the effective beaten zone.

They are never used at less than 1,000 yards or with less than 100 men.

They are used:—

(1) When the range is not known.

(2) When observation is not possible.

(3) For surprise effect.

Types of Fire Orders.

IN THE DEFENCE.—In all fire orders in the defence you must give out descriptive points, and limits of sector that the unit has to watch must be strictly defined.

EXAMPLES: (i) The sector of ground you will have to watch will be from church on the left to tall chimney on the right. Your descriptive points will be chimney on the right limit of sector that will be known as chimney.

In middle foreground large isolated tree, that will be known as tree. Church on left limit of sector will be known as church.

NORMAL FIRE ORDER.—"800 (eight hundred)—church—immediately right of church trench — along that trench — 5 rounds—distribute—fire."

(ii) *Fire Direction.* — Fire Leader's order:—"950 (Nine-Fifty)—Straight to your front—low lying hedge—along that hedge — five rounds — distribute — by platoons."

(iii) *Fire Control.*—Fire Unit Commander's order:—"No. 1 Platoon—950 (Nine-Fifty)—Straight to your front, low-lying hedge—from extreme right of hedge—to gate on the left—5 rounds—distribute—fire."

(iv) *Partial Distribution* (by Fire Leader):—"Company 'Cease Fire'—Nos. 1 and 2 Platoons, 5 rounds, continue—3 and 4 Platoons—church—immediately right of church artillery limbering up—1,000 (ten hundred) at that gun—5 rounds—rapid—fire."

This last case is one where, whilst engaging one target, another target suddenly appears. In order to effectively control the fire you must first cease fire and then direct your fire to the best advantage according to the tactical requirements of the situation. Quick judgment is essential here, as you must consider whether it would be better to turn the whole of your fire on to the artillery, who form a vulnerable target whilst limbering up, or to keep both of your targets engaged at the same time. The facts worthy of consideration are: if you turn the whole of your fire on the artillery you will suffer some casualties whilst doing so, as you will be under fire from the trench.

IN THE ATTACK.—You give out a frontage prior to giving any fire orders.

EXAMPLES: The limits of your frontage will be cottage on the right to where hedges intersect on the left:—

(i) "750 (Seven-Fifty)—Enemy crossing your front—at the leading section—5 rounds—rapid—fire."

(ii) "1050 (Ten-Fifty)—Advancing infantry—at the leading left-hand man—3 rounds—rapid—fire."

In the ordinary way one would not pause to give fire orders in the attack except a very favourable target (such as infantry in fours marching to a flank) presented itself, the idea being to push on and close with the enemy to deliver the decisive assault. Naturally the advance would be made under covering fire of one's own troops, which will be dealt with in a later chapter.

EXAMPLE OF FIRE ORDER WITH MOVING TARGET.—"1,050 (Ten-Fifty)—artillery galloping across your front—one length in front—5 rounds—rapid—fire."

EXAMPLE OF FIRE ORDER USING COMBINED SIGHTS:—

(i) "Right half company 950; left half company 1,050 (Ten-Fifty)—retiring enemy—5 rounds—fire."

(ii) "Right half company 1,000; left half company 1,100 (eleven hundred)—stationary ammunition column on road—5 rounds—rapid—fire."

Officers and non-commissioned officers should be practised daily in the giving of fire orders, as too much importance cannot be attached to this part of their training.

The training which is essential for officers and non-commissioned officers is contained under the following sub-heads:

(i) Visual Training.
(ii) Military Vocabulary.
(iii) Indication (landscape target in the elementary stages and open country advanced).
(iv) The Wind Table.
(v) The Error of the Day (lateral).

THE SECOND STAGE.

(i) Judging Distance.
(ii) Use of Instruments (Mekometer, One-man range-finder).

(iii) Observation of Fire.

(iv) Error of the Day (vertical).

THIRD STAGE.

(i) Necessity for Volume.

(ii) Different Methods of Control.

Men should be trained in visual training, military vocabulary, aiming and firing, recognition of targets, the passing of orders and fire discipline, in order that they may appreciate the fire orders and successfully carry them out.

Fire orders should first be illustrated by the instructor on landscape targets, then given practice on pole targets, exercises representing an enemy, and adopting various formations. In the advanced stage men should be used to represent enemy.

Company officers should exercise their companies in the execution of fire orders first on landscape targets, then with pole-targets representing an enemy, and finally with one platoon of the company acting as the enemy.

Good fire orders are the basis of good fire effect. Well-trained officers and non-commissioned officers are essential for their indication and good leadership, and highly-trained and well-disciplined troops are necessary for their successful execution.

CHAPTER VIII.

FIRE DISCIPLINE—USE OF COVER.

AMMUNITION SUPPLY.

Fire Discipline

Is the ability of the rank and file to comply with all orders in relation to fire, and in the absence of such orders to keep on firing, according to the tactical requirements of the situation. It ensures the correct adjustment of sights, deliberate aim, economy of ammunition, passing of all orders, prompt cessation of fire when ordered, and endurance of the enemy's fire when response is no longer possible.

Fire discipline is taught in three stages.
I.T., s. 117.

1ST STAGE

Is carried out at the halt, and easy, well-defined objects are taken as targets.

The squad is extended to about one pace. First of all, define fire discipline and do not give ranges over 800 yards. Select a prominent object (such as a gasometer) and give the order "Standing—Load." Then give the range and object.

(1) Ask each member of the squad what they are aiming at.
(2) See loading is carried out in proper sequence.
(3) See that the sights are correctly adjusted.
(4) See the squad takes deliberate aim and uses the rate of fire you ordered.
(5) Give the order "Cease Fire" and ensure that every man takes a fresh charger from the pouch and re-charges his magazine.
(6) Give the order to "unload" and see that it is carried out in the proper sequence and sights reduced to normal.
(7) Inspect all the rifles to see that all safety catches are back.
(8) Emphasise the pouch being buttoned.

The first stage should be carried out in all fire positions and strict attention paid to all points of elementary training. The passing of fire orders forms part of the first stage of fire discipline training. Extend your squad to about a dozen paces interval and preface your order with the name of the sender.

EXAMPLE: From No. 2 Section Commander: "750—Long black traverse—5 rounds—fire."

Orders should be made increaingly difficult, according as the squads become more proficient in their transmission.

2ND STAGE.

Movement is introduced in this stage but without tactical consideration. The instructor takes his place in the squad where he can best exercise supervision, in order that he can adopt the same position as the firing line. In this stage the squad loads before the practice commences. On the command "Halt" the squad should assume the normal service position (prone), except otherwise ordered, and await fire orders. All points of elementary training as in first stage should be noted here, that the squad gets up and down rapidly, and that all safety catches are at safety during movement. Examine all pouches to see if they are properly closed, and impress upon the squad that tardiness in getting up or down is responsible for a large percentage of casualties on service.

3RD STAGE.

Carried out with movement, and men act on their own initiative. This is the advanced stage of training of Fire Discipline as the range is increased to the limit of effective range (1,400 yards), and surprise targets such as horses, men, cyclists, etc., are used. The use of ground and cover must be taught here. For instance, if men get the order "1,200—cart on road," they must face in that direction and make use of any cover which is available without any further orders. They must also use their own judgment as to how much they will aim in front of a moving target, what rate of fire the target would justify, and what allowance they would make for wind, if any. In-

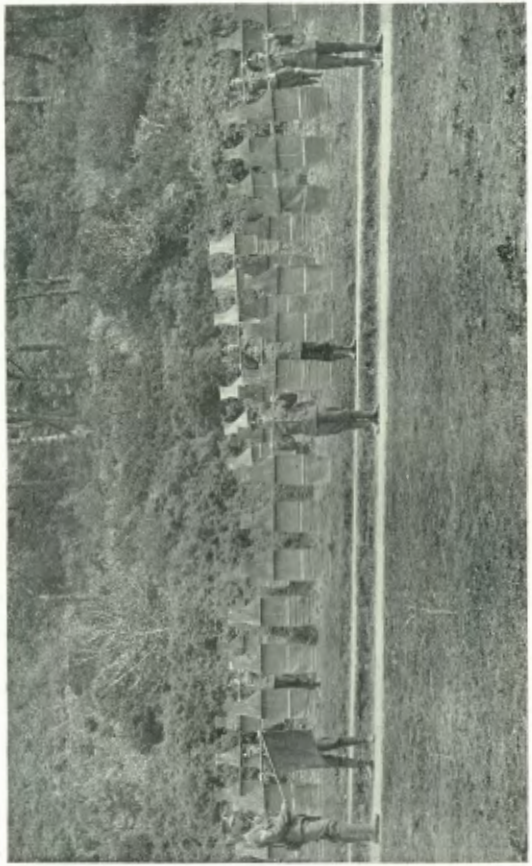
formation at this stage should be of the most meagre kind. It is advisable to omit the range and see if men will adjust their sights and open fire without further orders. The instructor at the termination of the exercise should question the squad as to—

(i) What range they used.
(ii) How many rounds expended.
(iii) What allowance for wind and movement.
(iv) Whether the target called for slow or rapid fire.
(v) Whether the best use was made of available cover.

The instructor should exercise the most careful supervision and ensure that no points of elementary training were neglected. Pole-targets should be used to represent a skeleton force, and various formations adopted on pre-arranged signals from the rear of the squad.

Use of Cover.

The proper use of ground and cover is one of the most valuable means at the



"POLE TARGET" EXERCISE.
Dummy figures representing skeleton force for the practice of Fire Orders.
To face Page 99.

disposal of a commander of a fire unit to get forward to a decisive range to close with the enemy and inflict loss.

There are two kinds of cover:—

(i) Cover from view.

(ii) Cover from fire.

Cover from view is very useful, as it helps a commander to get forward his force without the enemy's knowledge and so effect surprise. Cover from view often imbues one with a false sense of security, and undulation which would afford cover from view might possibly be swept by unaimed fire which would render it a veritable death trap. Loss of fire effect must not be sacrificed to cover from view. Reduction of casualties up to close range should be the primary consideration of a commander, then fire effect. It is very often much better to lie in the open than to take cover behind what may be a range mark for the enemy which does not afford cover from fire. A good example of this kind is a hedge. It affords cover from view, but not necessarily from fire.

Cover from Fire.

Although it affords protection and reduces casualties it has many disadvantages:—

(1) It delays the advance.
(2) Probably is a range mark.
(3) May cause unnecessary crowding.
(4) If known to be occupied attracts artillery fire.
(5) Men are loth to leave position.

THE BEST FORM OF COVER is covering fire. There are two kinds of covering fire:—

(1) Half the firing line engages the target whilst the other half advances. This is termed mutual support.
(2) The close co-operation of all arms in the final stages of the attack. The employment of machine guns and specially detailed bodies of infantry all afford covering fire in the development of fire superiority.

(Examples, Neuve Chapelle, and Hart's Hill, 27th February, 1900.)

The principles of defence are now mainly confined to fire trenches, and cover is an essential part of their utility for defensive purposes. There are two kinds of head-cover:—(i) Head-cover which is not necessarily bullet-proof — for instance, what a man hastily throws up with his entrenching tool during a pause in the advance. (ii) Parapets, sandbags, etc., for a form of head-cover are very useful for protective purposes against direct fire.

OVERHEAD COVER should consist of 9 inches to 12 inches of earth, or about 3 inches of shingle, supported on brushwood, boards, corrugated iron, etc. (Field Service Pocket Book, Chapter 4). Walls can be notched or loop-holed; the latter give the best cover but should not be closer than 3 feet from centre to centre. Dummy loop-holes should be added (F.S.P.B.).

In selecting the site for fire trenches the following points should be remembered:

The Six "C's."

(1) Clearance of foreground.
(2) Creation of obstacles.

(3) Concealment (parapet as low as possible).
(4) Clear field of fire (200—400 yards).
(5) Cover (overhead, and for supports, head-cover).
(6) Communication (lateral and backward).

The following points also require attention:—

(a) Good field of fire. Most important within 400 yards of the trench.
(b) Concealment and invisibility, obtained by adapting trenches to form of the ground, keeping parapets low, and by use of natural and artificial cover.
(c) Parapet should be bullet-proof.
(d) Head-cover, which must be inconspicuous should be provided if possible.
(e) Trenches should be traversed or recessed if enfilade fire is likely.
(f) Cover for supports near at hand.
(g) Trenches should have a steep interior slope. Slope will be wide enough to allow men to pass and drainage should be provided. (F.S.P.B.)

Cover from Aircraft.

Cover from hostile aircraft can best be obtained by moving through woods or along hedgerows. The difficulties of observation are increased if men stand still or lay down when a hostile aircraft approaches and refrain from looking up when it passes overhead. It must be understood, however, that when once committed to the attack no attempt will be made by the firing line and supports to seek cover from the enemy's aircraft, the mission of which at this time will more probably be to locate the reserves.

Even a few troops marching on a wide road are clearly visible from the air. In order to conceal a movement from hostile aircraft troops should be kept to the sides of the road and march on the grass rather than the metalled portion. Narrow roads with high hedges are the most favourable for concealment.

I.T., s. 108 (7, 8).

Practical instruction will be given in the use of ground. The soldier will be taught that the most important requirement in cover is that he can use his rifle

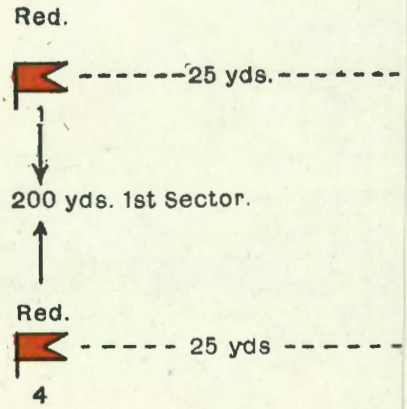
to the best advantage. In endeavouring to do so he should expose himself as little as possible to the enemy's fire.

I.T., s. 108.

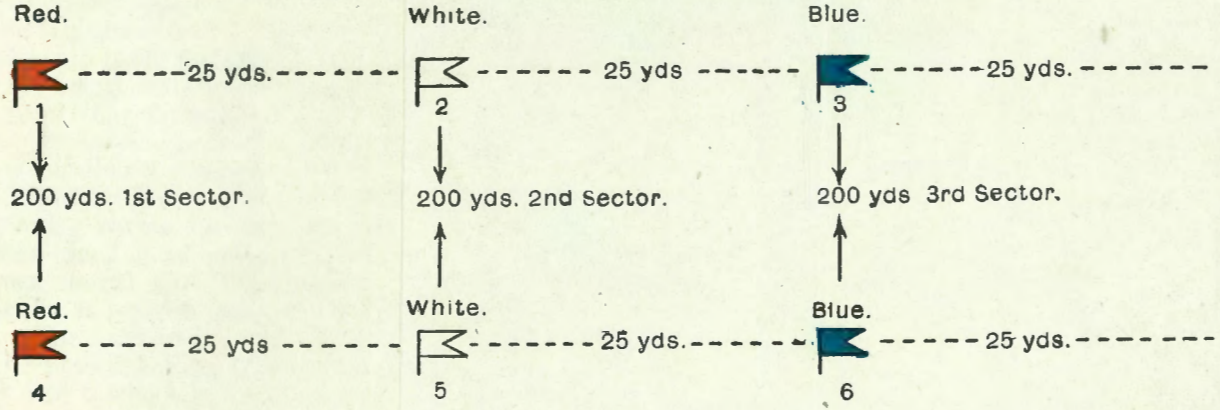
The best manner in which to teach a recruit the proper use of cover is in my opinion the method adopted at the French School of Musketry. It makes an indelible impression on the recruit's mind and teaches him that ground, which appears normally level to the naked eye, affords plenty of cover to render an approaching enemy invisible if properly used, due to the conformation of the ground.

The only things necessary for this exercise are three red, white, and blue flags in duplicate, and three fatiguemen, each with five rounds of blank. Choose a piece of undulating ground about 200 yards long and 100 yards wide.

Divide the ground into three sectors, and place a flag to mark the limits of the sector laterally. Place three corresponding flags in line at about 25 yards interval and 200 yards distance (*vide diagram*).



FIRE DISCIPLINE TRAINING AND USE OF COVER.



To face Page 104.

The fatiguemen take up a position behind 1, 2 and 3 respectively and charge their magazines. The recruits to be exercised take up their positions behind 4, 5 and 6.

The limits of the sector allotted to each recruit must be strictly defined. If one recruit encroaches upon the territory of another he is disqualified. The object of the recruits is to reach the flag at the other end without being seen, by making proper use of cover. The fatiguemen, who must adopt proper service positions, represent the enemy holding a position. The very moment a fatigueman sees any part of a recruit moving within his sector he fires and places his flag in position. That recruit then stands up. When the order "Advance" is given all flags are lowered. The practice is criticised at the end by the superintending officer, and the recruit is shown where he failed to make proper use of cover. A common fault with recruits is that they move with their bodies diagonally to the position, which makes a big target for the enemy. They also seem to think (ostrich-like) that

if their head is concealed the remaining part of their anatomy is no longer visible. This practice is especially useful in teaching scouts the proper use of cover.

Ammunition Supply.

The supply of ammunition in the field is one of the most serious factors we have to contend with during war. Every officer, non-commissioned officer and man should be conversant with at least how his battalion is supplied and the different channels of communication it passes through from base to firing line. The administrative services deliver ammunition at the " Re-filling Points," which are situated within reach of the fighting troops, usually within one day's march of them. F.S.R., Pt. I., s. 49.

The small arm ammunition available in an infantry battalion consists of—

(a) 120 rounds carried by the soldier.

(b) 100 rounds regimental reserve, carried for each rifle, partly on eight pack animals (two per company) and the remainder either in S.A.A. carts or on pack animals.

(c) 3,500 rounds are carried in the limbered wagons of the machine gun section.

(d) 8,000 rounds reserve ammunition are carried in the S.A.A. cart of the section. I.T., s. 166 (1).

A brigade reserve, under a selected officer, will normally be formed by detaching from each battalion as much of its regimental reserve ammunition as the brigade commander may think fit. The brigade reserve forms a link between the regimental reserve and the artillery brigade ammunition column. It should be regarded as available for the brigade generally, but in the case of necessity it will supply ammunition to any troops engaged. This reserve marches in rear of the brigade and during an action moves as the brigade commander may direct. It should be accompanied by orderlies to maintain communication with the various regimental reserves. If battalions are detached to any distance they will usually take the whole of their regimental re-

serves with them, the brigade reserve being re-formed on their return.

I.T., s. 166 (2).

The diagram opposite will afford a rough idea how the ammunition reaches the firing line from the base.

The ammunition carried in linen bandoliers in chargers is an idea borrowed from the Japanese, who used it with great success in Manchuria. It has the advantage of being easily portable and easily distributed. There are various means of ensuring an adequate supply of ammunition in the firing line.

(a) Prior to an engagement issue additional rounds to each man. The issue should be as late as possible in order to avoid fatiguing the men sooner than necessary. The Germans issue as much as a man can carry without undue fatigue.

(b) Husband ammunition during fight. Good fire control is necessary. Do not open fire at long range except when imperative, or favourable target presents itself. Lack of fire discipline in the personnel of a company is responsible for a

ILLUSTRATI

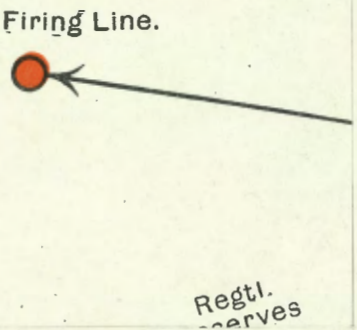
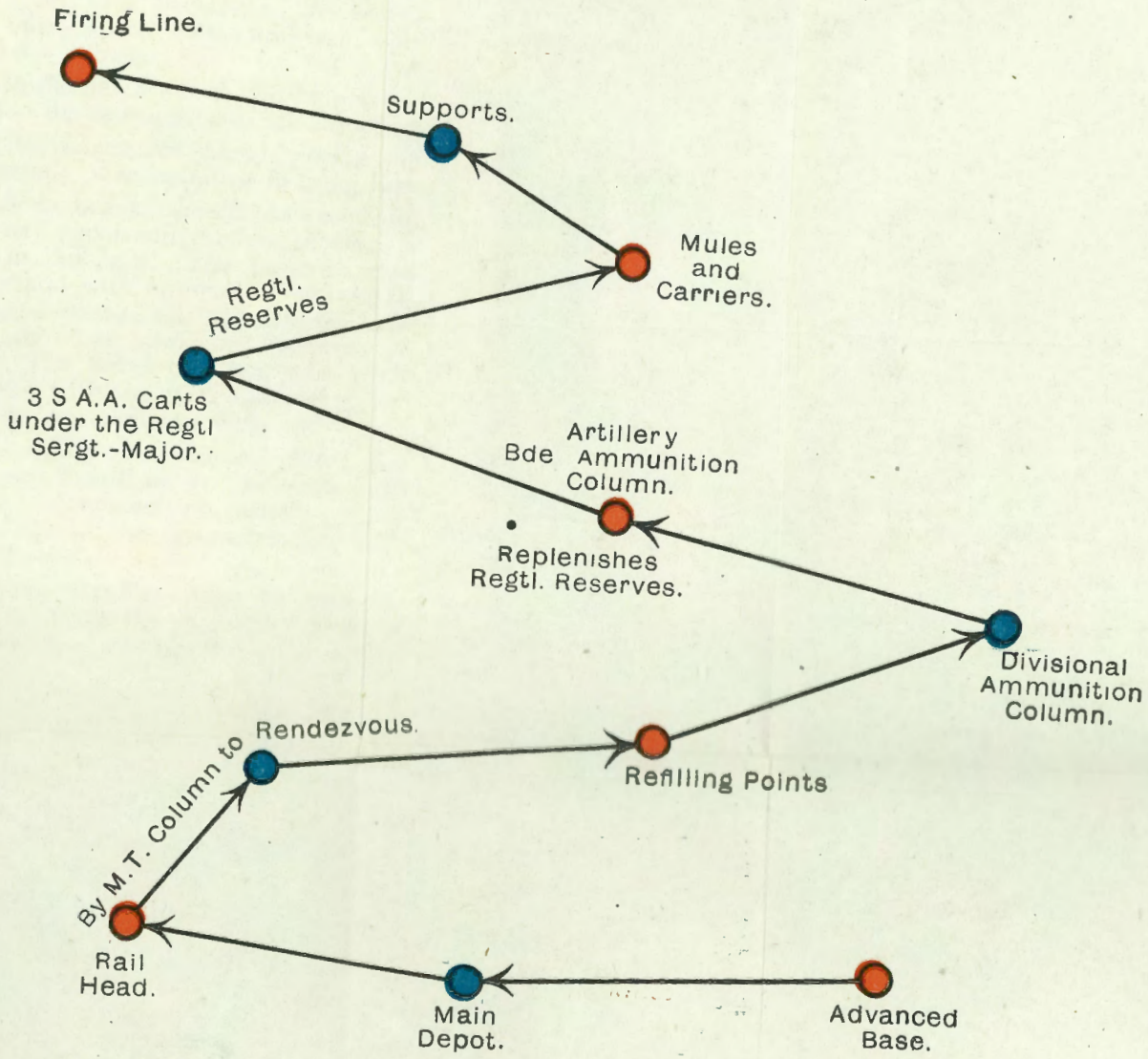


Illustration of Ammunition Supply



To face Page 108.

F.S.P., chap. 6, 33.

great waste of ammunition, such as opening fire without good cause. Misapplication of fire to a target, i.e., the use of rapid fire where slow fire was only justified.

(c) In the defence it should be possible to collect the ammunition of all casualties.

(d) Reinforcements should bring up fresh supply of ammunition to firing line.

(e) Ammunition should be sent up whenever opportunity offers during a pause in the fight. The Japanese used this method with appreciable success by sending forward all unemployed men under an officer and non-commissioned officer. The firing line was very often reinforced with the chief idea of replenishing the ammunition supply.

(f) One non-commissioned officer and a few men should be detailed from each company as ammunition carriers. They should supply the reinforcements with ammunition.

(g) Reinforcements may be used to replace the firing line in future advances. This method is not advisable, as it may

lead to misapprehension which may entail very serious consequences.

(h) Men should not be sent back from the firing line for ammunition, as it produces a bad moral effect. Men who take ammunition to the firing line should not withdraw until a suitable opportunity occurs.

For the purpose of arriving approximately at the number of rounds to be carried in ammunition columns, the number of rifles in units is calculated at 500 for cavalry regiments and mounted infantry battalions, and at 1,000 for infantry battalions; other units are not considered. The capacity, in rounds, of vehicles and animals allotted for small ammunition is as follows: :—

Each S.A.A. cart, 16,000 rounds.
Each Limbered G.S. wagon, 16,000 rounds.
Each G.S. wagon, 40,000 rounds.
Each Pack animal, 2,000 rounds.
Each Lorry (a ton), 80,000 rounds.

F.S.P.B., chap. 6, 13.

Chapter IX.

FIELD PRACTICES—INDIVIDUAL AND COLLECTIVE.

Field Practices include the fourth and fifth stages of the training of the soldier and must be considered the most important part of his training. Practices should be simple and not contain too much tactical detail. Officers are very often discouraged because they have not a field firing area at their disposal; whereas the ordinary classification range is quite sufficient to meet all needs. In this chapter, it is my intention to deal with field practices which would be suitable for the ordinary rifle range.

Every company officer should know how to frame a field practice and not go too deeply into schemes which contain "General" and "Special" ideas far beyond the intellectual range of the executive, and only lead to hopeless confusion.

Each practice should have a definite objective, should be instructive to the men, and should be of a practical nature, representing a situation which is likely to occur in actual warfare.

There are two kinds of Field Practices:

1. Individual (Part IV, Table B).
2. Collective (Part VI, Table B).

The individual field practice is solely for the individual teaching of the soldier as its name implies. It is a test of his combined elementary training. Men work in pairs and are entirely dependent on their own initiative. In order to enable instructors to criticise a field practice the most general mistakes can be classified under the following points of criticism:—

Points of Criticism.	Remarks.
(1) Loading first opportunity	Yes.
(2) Advance to position ...	Not quick enough.
(3) Use of cover	Neglected.
(4) Watching the front ...	Disregarded.
(5) Consultation	No.
(6) Judging distance to target	Yes.
(7) Point of aim	No.
(8) Rate of fire	No.
(9) No unnecessary movement	Too much.
(10) Observation of fire ..	Good.
(11) Passing the correct range and not the sighting elevation	Sighting elevation passed.
(12) No petty alteration of sights	Down 50
(13) Recharging of magazines	Unloaded.
(14) Passing of all orders ...	Fair.
(15) Strict attention to all the points of elementary training	Good.

When an instructor is detailed to criticise a field practice, he should rule a page in his notebook into two columns, as above. On the left-hand side write down the points of criticism and reserve the right-hand column for remarks. Then he should closely watch the firers and write down in his column of remarks his criticism. For instance: No. 11—"Passing correct range and not the sighting elevation." Above it is shown "Sighting elevation passed"; that means to say, a man when firing at 500 must use 550 in order that his shots may be effective. He just got in an effective shot with his sights at 550, and the range he sent down the firing line was 550 instead of 500, which would be the correct range, 550 being the sighting elevation.

"(1) Loading first opportunity."—Men should always load under cover prior to the advance.

"(5) Consultation." — Each pair of firers must consult as to what allowances to make for wind, atmospheric conditions, etc.

"(9) No unnecessary movement."—The moment a man reaches his position he must be motionless until he fires, then he should only move his arms.

"(12) No petty alteration of sights."—Men are inclined to alter their sights in 50's of yards; it must never be less than 100 yards. They must either put them up 100 or down 100.

"(13) Re-charging of magazines."—On the command "Cease Fire" men must automatically take a fresh charger from the pouch, re-load, and apply the safety catch.

I do not consider that the other points of criticism require any further explanation, as they are fairly obvious.

The manner in which a field practice should be framed is as follows:—

(1) Object of the practice.
(2) Ammunition (rounds per man).
(3) Targets (necessary).
(4) Orders to markers.
(5) Signals to be employed.
(6) Method of conducting the practice.

These six headings are the skeleton form of a field practice.

Individual Field Practice.

(1) OBJECT OF THE PRACTICE.—To accustom men to targets which they are likely to meet on service.

(2) AMMUNITION.—10 rounds per man.

(3) TARGETS. — 50 head-and-shoulder figures in prone position in front of butts. Three pairs of falling iron plates, each pair representing a machine gun "in action." Distribution: A pair on either flank and one pair representing machine gun in support.

(4) ORDERS TO MARKERS.—The figure targets will be placed close to the butts, about 30 yards in rear of the 100 yards firing point. The iron plates will be placed two on either flank and one pair on top of the butt stop.

(5) SIGNALS.—All hits will be signalled by flag at conclusion of practice. Each hit on the plates will count 2 and each hit on the figure target will count 1. The number of hits will be communicated to the supervising officer by telephone.

(6) METHOD OF CONDUCTING PRACTICE.—The men will form up in two ranks 50 yards in rear of the position they are about to occupy. It must be assumed that control is no longer possible and the requirements of the situation are dependent upon individual effort. Also that the platoon is not visible from the enemy's position. The men will load under cover and advance on a signal from the superintending officer. The time of exposure of the targets will be 30 seconds. They will disappear for 2 minutes and then reappear for a similar period. All unexpended ammunition will be forfeited. Instructors will inspect arms at the termination of the practice and report result to the supervising officer. In an individual field practice the fire effect of one is dependent upon the observation of the other; that is the chief reason men work in pairs for observation and mutual support. It frequently happens that men get so excited in a field practice that

they both fire at the same time, observation being altogether neglected. However, the instructor must not check this during the conduct of the practice but must reserve his criticism till afterwards. An individual field practice should not be fired at ranges beyond 600 yards, the limit of individual field fire, and should be carried out in drill order.

Collective Field Practices.

Collective field practices are primarily intended to afford the commanders of fire units practice of their duties of direction and control of fire. With this must be combined the study of results to be obtained from the delivery of fire targets representing troops in different formations, on ground of varying character, in order that practical experience may be acquired of the principles which govern the employment of fire in the field.

M.R., Pt. I., 542 (1).

Collective field practices should be treated as the most important stage of the soldier's training, and officers and

section commanders should give good fire orders and ensure their rapid and intelligent execution. The human element must be studied; an order should be given that could only contain one interpretation, and anything in the nature of ambiguity must be studiously avoided.

The result of the fire effect must be communicated to the company or platoon. Also point out how the fire effect could be appreciably increased with less expenditure of ammunition if possible.

EXAMPLE OF COLLECTIVE FIELD PRACTICE SUITABLE TO EXERCISE A SQUAD.

OBJECT OF THE PRACTICE.—To practise observation of fire and make corrections from its result; to exercise commanders in selecting a point of aim in order to counteract any adverse existing conditions and obtain the best fire effect.

TARGETS.—Five groups of falling plates. Each group consists of three targets, with an interval of about 3 feet between each target. Groups 15 yards apart; thirty figure 3's.

AMMUNITION.—10 rounds per man.

ORDERS TO MARKERS.—Targets will be placed on the stop-butt. The number of hits on each plate will be recorded and the number of the group noted. On ring from telephone figure targets will appear in mass formation and deploy rapidly when fire is opened.

SIGNALS.—For each plate knocked over, two hits will be signalled. Each hit on any plate will count one. All hits to be signalled by semaphore at termination of the practice.

METHOD OF CONDUCTING THE PRACTICE.—The men will form up in two squads, each squad consisting of eight men, at about 30 yards in rear of the position they will eventually occupy. The position should be 800 yards to 900 yards away from the targets. When firing has been in progress for about 1 minute the supervising officer should give the order "Cease Fire." The falling iron plates should then be considered partially out of action. Name the groups; for instance, 1, 3 and 5 groups out of action,

and figure targets appear on a given prearranged signal.

The fire unit commanders will then have to decide whether it would be advisable to switch the whole of their fire on to the fresh target, or whether they should engage both targets by partial distribution.

The fire leader should at once be informed of the change in the situation by his subordinate commanders.

All unexpended rounds will be forfeited.

EXAMPLE OF COLLECTIVE FIELD PRACTICE SUITABLE FOR A PLATOON.

OBJECT OF THE PRACTICE.—To teach men concealment and use of ground. The manner in which machine guns should be dealt with if encountered. The effect of application of fire to a given point (concentrated fire).

AMMUNITION.—15 rounds per man.

TARGETS.—Two screens about 3 feet wide, with 50 yards interval, each repre-

senting a machine gun in action. They should be concealed in natural cover if possible and should not be visible to the firing line.

ORDERS TO MARKERS.—Hits will only be signalled at the termination of the practice. Markers will be concealed in the pits on the range, and by means of rattles will denote the supposed direction of the machine gun fire.

SIGNALS.—The hits on each gun will count 2.

METHOD OF CONDUCTING THE PRACTICE. —The platoon will be drawn up in rear of the position and load under cover; they will advance at the double to the position. On reaching the position they will be informed that the advance has received a temporary check from machine gun fire, the general direction of which is known.

Combined sights will be used, as the three causes are present which justify their use:—

(a) Range is not known.
(b) Observation is not possible.
(c) For surprise effect.

An aiming mark will be pointed out to the platoon for each gun.

Extended infantry does not form a very vulnerable target for machine guns. Concentrate fire on each gun separately. The fire employed will be rapid. The whole firing line will engage each gun as the result of machine gun fire. The gun not engaged will have but a negligible effect if the ground occupied is not favourable for observation purposes. Within 50 seconds from the opening of fire the commander will engage the other gun, as by that time he will assume that, owing to the intensity of the volume of fire, the first gun is no longer serviceable. When observation has been obtained combined sights should no longer be used.

All the foregoing practices are suitable for an ordinary classification range, and should serve as a general guide for the ever fertile brains of company officers, whose initiative is always so pronounced.

CHAPTER X.

INFANTRY IN BATTLE.

In dealing with the striking force of infantry in the field, one must take into consideration climatic conditions, equipment, the nature of the country, and the power and limitations of the rifle the infantryman is armed with. The various characteristics of the different arms must be understood, as it is necessary that close co-operation should exist between all arms to ensure success. The normal infantry fire unit is the section. Therefore it is of paramount importance that a high standard of efficiency should be reached by section commanders. Too much importance cannot be attached to the teaching of section commanders during peace, in order that they may successfully apply their knowledge during war. The value of a fire unit commander is dependent upon his ability to apply fire:—

(1) At the right time.
(2) In the right volume.
(3) To the right target.

The close relationship between fire and tactics should be impressed upon the soldier, as the success of one is mainly dependent upon the aid of the other.

I.T., s. 116.

THE OBJECT OF FIRE is to facilitate and prevent movement, to enable a commander to pin the enemy to his ground and get forward to deliver the assault with the bayonet which must be decisive.

THE OBJECT OF TACTICS.—Tactics deal with the placing of a commander's force in the field in order that he may obtain the best possible results from his dispositions; also deals with the movements of troops in the field and formations in battle, in order to get forward his command with the minimum of risk.

THE DUTIES OF A FIRE UNIT COMMANDER IN THE FIELD (I.T., s. 116).

(1) Must indicate the target.
(2) Issue orders for sighting elevation and deflection if necessary.

(3) Must supervise as far as possible the correct adjustment of sights of his command.

(4) Must husband his supply of ammunition and make arrangements for its replenishment.

(5) Must establish and maintain communication with units on his right and left.

(6) Must keep his superior commander informed of any changes which may occur in the situation.

(7) Must—

(a) In the attack—

(i) Allot a frontage to his section.

(ii) Make a key range.

(b) In the defence—

(i) Make a range card.

(ii) Give out a sector of ground to his section to watch, and descriptive points.

(8) Must regulate the rate of fire to be employed.

The climax of the infantry attack is the assault, which is only rendered possible by superiority of fire. Fire superiority is a very wide term and contains such a host of essentials that it is almost indefinable. In the development of fire superiority no part of the enemy's line should be neglected, as the subsequent results arising from this cause may prove disastrous.

Superiority of fire can only be gained by the close co-operation of all arms; infantry acting alone can very rarely hope to achieve it, as it is well-nigh impossible without the aid of artillery. It is required only at decisive range, as it is the duty of a commander up to that point to avoid casualties. When he reaches the decisive point he uses all legitimate means at his disposal to develop fire superiority prior to the assault. Good fire organization orders are essential, so that the best effect may be obtained. Artillery, cavalry, machine guns, specially detailed troops, are all potent factors in determining the final result. Fire superiority may be termed that stage of a fight when you can dictate

terms to the enemy; in other words, when his fire has ceased to be effective, his reserves depleted, and you are master of the situation. Infantry obtains superiority of fire by good marksmanship, fire direction and control, use of ground, combined with good fire discipline. The best indication of fire superiority is when the enemy's line begins to crumble away; first of all, one man leaves the enemy's line, then groups of four and five.

A remarkable instance of failure to obtain fire superiority was Hart's Hill, 4th February, 1900, and Point du Jour. Hart's Hill, 27th February, 1900, was a good example of fire superiority being obtained. Commanders are very often in doubt as to whether they should open fire or not.

The following points are worthy of consideration before coming to a decision as to the opening of fire:—

(1) The early opening of fire discounts surprise, and whether in attack or defence very often indicates the position of troops which would otherwise pass unnoticed. In the attack it may unnecessarily delay the advance.

(2) Beyond 1,400 yards the fire of even large and well controlled units of infantry has seldom much effect upon the struggle for fire superiority. Exceptional circumstances, such as the appearance of large bodies of the enemy in vulnerable formations, may justify the early opening of fire, especially in the defence.

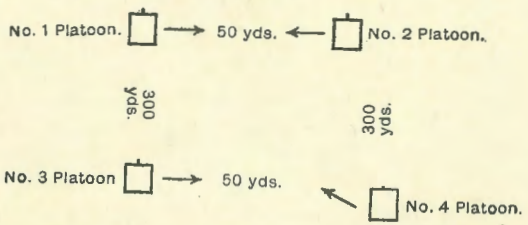
(3) Between 1,400 and 600 yards carefully controlled collective fire produces far better results than the uncontrolled fire of individual men, which ceases to be sufficiently effective at ranges beyond 600 yards, to counter-balance the expenditure of ammunition involved.

I.T., 1914, s. 116 (7).

Formations in Battle.

Our greatest opponent in the preliminary stages of the advance is modern artillery. In order to counteract the effect of artillery fire suitable formations can be adopted consisting of small shallow columns on an irregular frontage, which reduces risk to the minimum.

Artillery Formation.



Artillery formation consists of lines of platoons or sections on an irregular frontage at 50 yards interval and 300 yards distance, with a directing platoon or section. All other platoons or sections conform to the movements of the directing platoon or section. The reason of the 50 yards interval and 300 yards distance is to counteract the forward effect of shrapnel.

The position of the company commander should be with or in close proximity to the section or platoon of direction. During company training I found that the men took far more interest in the manœuvre if the movement was

explained to them beforehand. First of all assemble your platoon and section commanders and explain to them what you intend to do. They in turn explain it to the men. A simple scheme should be drawn up. Suppose you are caught in an open space in column of route, and you suddenly come under artillery fire, the men should automatically adopt artillery formation. However, before this stage of efficiency can be reached they should be taught it purely as a drill. The only orders which need be given are "Right platoons to the left (1 and 3), left platoons to the right (2 and 4)." 50 yards interval; 300 yards distance. No. 1 will direct. The company should form two deep or single rank, and get into their position at the double, Nos. 2 and 4 platoons wheeling to the right and No. 3 covering off No. 1 at 300 yards interval. The company should then be halted and the interval and distance should be measured by the company sergeant-major by means of a pace stick if no other means is available.

Platoons should be led into the proper formation by the platoon commanders. In speaking of Nos. 1, 2, 3 and 4 platoons it is assumed here that it is the letter "A" Company of a battalion which is employed. After sufficient practice the only words of command which need be used are "Artillery formation," when the company should double into the required position.

The advantages of this formation are:

(1) It provides very little aiming mark for direct artillery.
(2) Each platoon or section must be independently ranged upon.
(3) It is easy to deploy.

The least vulnerable formation under rifle fire is extended formation, but it has the disadvantage of delaying the advance.

Formations under Machine Gun Fire.

The best formation under machine gun fire is extended formation, as it does not form a very vulnerable target. On coming under machine gun fire deploy immediately into one long extended line and concentrate your fire on one gun at the time. Make the best use of all available cover and avoid as far as possible ground which would be suitable for observation purposes. Ground suitable for observation of machine gun fire would be sandy soil or water where the observer of the enemy's detachment could see the result of the strike of the bullets. The advance should be continued by short rushes in small numbers at irregular intervals from different points of the line. Advance on an extended front to decisive range (600 yards), where rapid fire can be effectively employed. Concentrate on each gun singly in order to put the detachments out of action. Avoid isolated objects such as a prominent bush or gate, which is most probably a range mark of the enemy.

Formation to receive Cavalry.

Infantry can adopt any suitable formation from which a good volume of fire can be delivered. Infantry have nothing to fear from cavalry, even though they pierce the line; the material effect is

negligible, their object being to produce shock action and subsequent demoralising effect.

DUTIES OF A COMPANY COMMANDER IN THE FIRING LINE.

(1) The company should, as a rule, be divided into firing line and supports, and if operating alone a reserve must be kept in hand as long as possible.

(2) Orders for scouts must be issued.

(3) Task and objective of each section should be indicated, if this is possible; line of advance of each should be pointed out or a directing section named.

(4) Inter-communication, both between sections and with neighbouring units, and replenishment of ammunition should be arranged.

(5) Section commanders should be informed where reports are to be sent and position of company commander.

All subordinate commanders are responsible for keeping their respective superiors as well as neighbouring commanders regularly informed of the progress of events and of important changes in the situation as they occur. All ranks should notice what takes place within their view and hearing, and report anything of importance to their immediate superior, who must pass the information on to the higher commanders and to neighbouring units. This is the foundation of co-operation in war and is essential not only in battle but at every stage of a campaign. During an action a company commander will leave with the battalion commander one man of his company who can be relied upon to carry a verbal message or order correctly. In the same way a battalion commander will send a representative of his battalion to brigade headquarters for the same purpose.

I.T., s. 119, 1, 2, 3.

Verbal messages should be reduced to a minimum and the written form substituted instead, as in their transmission orders and messages are likely to be so changed that when they finally reach the person for whom they are intended they may contain very little (if any) of their original meaning.

Form of Written Message.

To Officer Commanding,
7th Royal Fusiliers, X Infy. Bde.
YPRES—MENIN road.
G.X. 25/8.

I am pushing on towards VERDUN which I hope to reach at 5 p.m. Scouts report that the X.Y. Bde. reached there this morning at 11 a.m. We have met with no opposition on the way.

A. Premysl, Captain,
O.C. X Coy., 7th R.F.
VERDUN RD.,
12 NOON.

By mounted orderly.

F.S.R., I.

All names of places should be in BLOCK LETTERS. Avoid the use of roman numerals. The above message shows how a message should be written. First put the address, after the address the number of the sender's message (G.X.), followed by the day of the month (25/8)—the year is not necessary.

If the message is in reply to a previous message the number of that message will be quoted. The text of the message will follow. The foot of the message should consist of name, rank, and regiment, then address, followed by time of despatch on

Machine Gun "in Action." (Rear View.)

To face Page 133

Machine Gun "in Action." (Front View)

To face Page 137.

the right-hand bottom corner of the message. The means of transmission (mounted orderly) should be written on the left-hand bottom corner. Avoid ambiguous terms. Never put 12 o'clock, it must be written either 12 midnight or 12 noon. A night is described:—Night 11/12 August; or night 30 June/1 July.

Machine Guns.

Each infantry battalion is at present issued with four machine guns. The utility of machine guns in battle cannot be disputed, as in the present war they represent the greatest striking power possessed by infantry if properly handled. The value of machine guns is dependent upon the standard of efficiency of the detachments. The machine gun is a weapon of opportunity particularly adapted for surprise effect, but not for sustained fire action. The tactical employment of machine guns is largely dependent upon the following essentials:—

(1) Effective range.
(2) Favourable target.
(3) From a concealed position.

The characteristics and their effect on tactical employment of the machine gun are as follows:—

ADVANTAGEOUS CHARACTERISTICS

(I.T., s. 160).

1. *Fixed Platform.*—This leads to (a) The personal factor is reduced. (b) Results in close grouping of machine gun fire. (c) The gun can be laid by clinometer elevation. On account of the reduction of the personal factor. The same results can be obtained during war as in peace. Close grouping, and therefore highly concentrated fire is suitable for surprise effect, and not only facilitates observation but renders that observation reliable. By use of clinometer elevation the machine gun can be employed effectively for indirect fire without being exposed to deliberate fire. Another advantage, lines of fire can be prepared during the day for use at night.

2. *Portability.* — Machine guns are very portable and can be taken anywhere where infantry can go.

3. *Visibility.*—The visibility of a detachment "in action" is only equal to a file (2 men), (Nos. 1 and 2), and the volume of fire delivered from so narrow a front is equal to about 30 rifles.

4. *All-round traverse.*—The machine gun can be turned in any required direction without changing the position of the tripod. This renders it especially useful in guarding against surprise attacks, whilst it does not increase its own vulnerability from enfilade fire.

5. *Invulnerability.*—The efficiency of the detachment is not impaired by casualties if there are sufficiently trained men to replace them. Two men can continue to work the gun if ammunition and water are available.

DISADVANTAGEOUS CHARACTERISTICS.

1. *Stoppages.* —The gun is apt to stop firing from time to time owing to the delicate nature of the mechanism of which it is composed. It may be unavoidable or otherwise. The detachment should be very highly trained in remedying

"jams," as they form the most common cause of cessation of fire. Badly filled belt (3rd position), too heavy fusee spring (1st position), separated cases (2nd position), tumbler pin worked out or bent, or broken firing pin (4th position), are the most common causes from which stoppages occur. There are many other causes of stoppages, but these are the most common. A trained machine gunner can always tell the cause of stoppage from the position of the crank handle, and remedy it forthwith.

2. *Permissible Error* is considerably less than that of rifle fire, owing to the density of the cone of machine gun fire. Hence good ranging is essential.

3. *Close Grouping*, albeit a very great advantage, has the disadvantage of covering only a very restricted area of ground, also narrow or widely extended objects offer very unsuitable targets.

4. *Steam and Automatic Noise.*— Steam gives away the position of the gun. This has now been overcome by means of the steam nozzle attachment. The automatic noise of a machine gun in action is unmistakable. Taking all these points into consideration, one must inevitably conclude that the machine gun in inefficient hands is more an impediment than a help. On the other hand, with well-trained personnel and good leadership the machine gun is one of the most potent factors that infantry possess.

I.T., s. 160.

CHAPTER XI.

MISCELLANEOUS.

Description and Use of Instruments.

(1) The eye-disc consists of a metal circular disc on a vertical wire rod. Both sides of the eye-disc are painted white. On the obverse side is a black bull's-eye in the centre of the disc, which is used for the triangle of error and as a target. On the reverse side is a black bull's-eye situated high up on the disc. This side is used for teaching and testing rapid aiming (snapshooting), rapid firing, and as a test for trigger pressing when the aim corrector is not available. The eye-disc has a projection of metal one-third of an inch, which is very useful in measuring the triangle of error.

(2) The Aim Teacher.

Known as the Le Gret aim teacher on account of the inventor's name. Used in

the French and British Armies to teach a recruit how to take a correct aim. It consists of sheet steel with a pair of spring jaws, by which it is attached to the butt of the rifle, a disjointed arm, and pivoted shutter fitted with an aperture sight. It is attached to the rifle by placing the spring jaws over the pistol grip, then locking them and drawing the aim teacher back as far as possible towards the butt-plate.

The instructor lays a correct aim by means of the aim teacher. (It is advisable to first lay an aim through the open sights in order to facilitate getting the correct aim with the teacher.) He shows this aim to the recruit, then turns the shutter over to the right and asks the recruit to lay an aim. The instructor checks the recruit's aim. If the recruit's aim is in any way incorrect the instructor proceeds to analyse the aim.

(1) He shows recruit relation of foresight to target.

(2) Shows relationship between foresight and backsight against a piece of white paper or skyline.

(3) Shows relationship between foresight, backsight and target.

The recruit, unless he is very dull, will by this time be able to lay a correct aim. Always see that the shutter is facing the butt-plate.

(3) The Aim Corrector

Consists of a pair of spring jaws, a vertical rigid arm, and a steel box with diagonal grooves. This box is fitted with a smoked glass, which is reversible and detachable. This box is capable of being adjusted to suit the visual angle of the firer. It moves on a slide. It is fixed in the rifle at the point of balance immediately behind the backsight. Great care must be taken in fixing the aim corrector that the angle which is formed by the glass and steel box faces the firer. The instructor lays at right-angles to the firer, looks through the smoked glass and by this means he can see whether the recruit disturbs his aim when taking pressure. If the recruit's aim appears on the right of the target it means his shot would

really go left if actually firing. The explanation of this is that the instructor sees exactly the same image as if looking into a mirror. He sees the target and the man's sights, not the firer himself. When you shave in the morning and you see your face in the mirror (assuming you don't die from shock) and you commence to shave the right side of your face, it appears to you that you are shaving the left side of your face and vice versa. But if you shave your forehead it does not appear that you are shaving your toe. In the same way the aim corrector gives you the same image. If he appears to be aiming at 12 or 6 o'clock his shot would go in that place if actually firing.

It is used—

(1) To correct a recruit's aim.

(2) To test trigger pressing.

(3) To teach the elementary stages of aiming off for wind and movement.

The various Types of Rifles used by Foreign Armies.

Country.	Pattern.	Calibre Inches.	Loading System.	Shape* of Bullet.	Sighted up to
					Yards.
Austria	Mannlicher	·315	Clip, 5 cartridges	S.	2,460
Belgium	Mauser	·301	Charger, 5 cartridges ...	R.	2,297
Bulgaria	Mannlicher	·315	Clip, 5 cartridges ...	S.	2,120
Denmark	Krag-Jorgensen	·315	Charger, 5 cartridges ...	S.	2,078
France	Lebel	·315	Tube fore-end, 8 cart...	S.	2,187
Germany... ...	Mauser	·311	Charger, 5 cartridges ...	S.	2,187
Greece	Mannlicher-Schonauer	·254	Charger, 5 cartridges ...	R.	2,600
Holland	Mannlicher	·256	Clip, 5 cartridges ...	S.	2,187
Italy	Mannlicher	·256	Clip, 6 cartridges ...	S.	2,187
Japan	Year 38 (1905) ...	·256	Charger, 5 cartridges ...	S.	2,187
Norway	Krag-Jorgensen ...	·256	Charger, 5 cartridges ...	S.	2,400
Roumania ...	Mannlicher	·256	Clip, 5 cartridges ...	R.	2,187
Russia	3-line	·3	Charger, 5 cartridges ...	S.	2,100
Servia	Mauser	·276	Charger, 5 cartridges ...	R.	2,187
Spain	Mauser	·276	Charger, 5 cartridges ...	S.	2,187
Sweden	Mauser	·256	Charger, 5 cartridges ...	S.	2,187
Switzerland ...	Schmidt-Rubin	·239	Charger, 6 cartridges ...	S.	2,187
Turkey	Mauser	·301	Charger, 5 cartridges ...	S.	2,187
United States...	Springfield	·3	Charger, 5 cartridges ...	S.	2,000

*S—Pointed. R—Roundnose. F.S.P.B., Chap. 9, 2.

It will be noticed here that the majority of rifles are sighted up to 2,187 yards and the calibre in inches is ·256. Instructors should frequently compare the rifle their unit is armed with, with those of foreign armies and discuss their relative merits.

Military Vocabulary.

TERM.	MEANING OF TERM.
Abatis	An obstacle formed of trees picketed to the ground with their points towards the enemy.
Administrative Services	Signal, medical, supplies, transport, ordnance, railways, works, remounts, veterinary, postal.
Advanced Base	The area within which are situated the advanced depôts of ammunition supplies, animals, and material from which issues to field units are made.
Banquette ...	A bank on which men stand to fire over a parapet.
Bivouac	An encampment without tents or huts.
Bomb-proof ...	A shelter, proof against penetration by shells.
Calibre	The diameter of the bore of a gun in inches measured across the lands.
Caponier	A small chamber formed in the ditch of a work projecting from the escarp, to give fire down a ditch.
Col	A depression between two adjacent hills; a break in a ridge; the neck of land connecting an outlying feature with the main range.

TERM.	MEANING OF TERM.
Contour	Is the representation on a map of an imaginary line running along the surface of the ground at the same height above mean sea level throughout its length.
Cossack Post ...	Consists of a detached post of three to six mounted men.
Crest (of a trench)	That point of a trench where the interior and superior slopes intersect (Topographical). The edge of the top of a hill or mountain; the position at which a gentle slope changes to an abrupt one.
Dead Ground ...	Ground which cannot be covered by fire.
Dressing Station	A place where wounded are collected and attended by the medical services.
Epaulment ...	A small parapet to give cover to a gun and detachment in action.
Echelon	A formation of successive and parallel units.
Fascine	Long bundle of brushwood used for revetting or road-making.
Fougasse	A small mine filled with stones, which are projected towards the enemy on the mines being fired.

TERM.	MEANING OF TERM.
Field Army ..	That portion of the army in the field not allotted to fortresses, garrisons, or coast defences.
Enfilade Fire ...	Fire directed from a flank.
Frontal Fire ...	Fire, the line of which is perpendicular to the front of the target.
Oblique Fire ...	Fire, the line of which is inclined to the front of the target.
Reverse Fire ...	Fire directed against the rear of a target.
Gabion	A hollow cylinder composed of metal or brushwood used for revetting purposes.
Glacis	The ground round a work within close rifle range.
Gradient	A slope expressed by a fraction (1/90).
Guy	A rope fastened to the tip of a spar or frame to support, raise or lower it.
Gyn	A tripod consisting of three spars, for raising weights.
Horizontal Equivalent	The distance in plan between two adjacent contours measured in yards.
Knoll	A low isolated hill.
Magnetic Meridian	A magnetic North and South line.
Magnetic Variation	The angle between true North and magnetic North.
Meridian	The true North and South line.

TERM.	MEANING OF TERM.
Mobilization ...	An armed force raised from a peace to a war footing.
Operation Orders	Orders dealing with strategical and tactical operations.
Routine Orders	Orders relative to interior economy and discipline.
Standing Orders	Orders issued to adapt existing regulations to local orders and are constantly in force.
Parados	A traverse to give cover from reverse fire.
Primers	Small discs of dry guncotton used to detonate wet guncotton.
Redoubt	A work with an all-round field of fire entirely surrounded by a parapet.
Re-entrant ...	A valley or depression running into a main feature.
Refilling Points	Points where sections of trains and divisional ammunition columns are refilled from ammunition parks and supply columns.
Rendezvous ...	Points where ammunition parks and supply columns are met by representatives of the headquarters concerned and directed to refilling points.
Revetment ...	Artificial means to make earth stand at any other than its normal angle.
Section— Cavalry	Four front rank men with their coverers.

TERM.	MEANING OF TERM.
Section— Artillery ...	Two guns of a battery with complete personnel, horses and material.
Infantry ...	1/16th of a company.
M.I.	Four men, one of whom acts as section leader.
Topography ...	The outline of the intersection of the surface of the ground by a vertical plane.
Sap	A trench formed by gradually extending the end towards the enemy.
The Staff	Staff Officers appointed to the General Staff, to the Adjutant-General's and Quartermaster-General's branches of the staff, or as Brigade Majors, Staff Captains to assist certain commanders in the discharge of their duties.
Supplies	Food, forage, fuel, light and disinfectants.
To Tamp	To envelop a charge with earth or other material in order to confine the gases and thus increase their destructive powers.
Traverse	A bank of earth, to give lateral cover.
Vedette	A mounted sentry.

F.S.P.B., pp. i-xi.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